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[(Music) Hi, my name is Janani Ravi, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=0) [welcome to this course on Designing and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=7.662076923076921" \t "psplayer) [Implementing Solutions Using Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=9.752624999999998) [Machine Learning APIs. A little about](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=12.039125000000002) [myself. I have a master's degree in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=14.505090909090907) [electrical engineering from Stanford and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=16.257636363636358) [have worked at companies such as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=17.752) [Microsoft, Google, and Flipkart. 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In this course, we'll see how you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=36.91633333333333)[can use and work with Google machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=39.597000000000016) [learning APIs, which make powerful](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=41.361) [pre-trained models trained on Google's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=43.75433333333334) [vast datasets available to anyone with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=46.229099999999995) [basic programming ability. 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Finally, we'll work with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=100.53945454545453) [the Vision and Video Intelligence APIs,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=103.31363636363633) [which allow us to perform face and label](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=c6ba5373-4bcf-451a-b8d5-be15cb041e7b&clip=0&mode=live&start=105.66509090909092) [detection on images. 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Vision APIs work with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=136.3376) [images, they perform feature detection,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=139.88640000000004) [label detection, and landmark detection](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=142.35733333333334) [amongst other tasks. 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That means there are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=164.15700000000004) [large spikes in the traffic patterns that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=167.04528571428577) [your site receives. Your organization](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=169.55878571428585) [wants to use the Google Cloud Platform](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=171.282) [because cloud computing allows them to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=173.54300000000006) [minimize their fixed costs. They want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=175.761) [pay-as-you-go functionality, and they](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=178.08700000000002) [don't want idle capacity on their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=179.59500000000006) [resources during off-sale periods. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=182.36228571428572) [developers at SpikeySales have been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=184.87027272727275) [thinking of adding cool new features to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=186.50163636363644) [the mobile app as well as to the website.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=188.7817272727273) [They're exploring the speech/text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=191.701)[interfaces to see whether it would be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=192.9238) [possible to have product reviews read out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=195.03118181818184) [to the user. They're also thinking about](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=196.9434545454546) [audio-enabled commerce. Because they're a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=200.40833333333336) [relatively new organization, they don't](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=202.7556363636364) [have a huge corpus of data to train their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=204.46336363636374) [own ML model for natural language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=207.33050000000003) [processing, which is why they're](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=209.173) [interested in the language/sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=211.0468888888889) [analysis APIs that Google has to offer.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=212.546) [Developers are also interested in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=216.123) [vision and video APIs to see if they can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=217.8611538461539) [enable image search, and they want to scan](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=220.551) [for unsafe or explicit content on their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=1&mode=live&start=223.1989999999999) [sites as well. 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The term Cloud AI refers](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=17.3234) [to the suite of machine learning offerings](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=20.910166666666665) [from Google, all of which are hosted on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=23.849) [the Google Cloud Platform, or the GCP. 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Another](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=38.77508333333335) [objective is to make the difficult use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=41.448299999999996) [case possible. 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These pre-trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=60.68499999999999) [models are meant especially for the novice](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=62.7996) [developer or the novice data scientist who](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=65.68920000000003) [has had little or no exposure to machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=67.99615384615382) [learning algorithms. Machine learning](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=71.02733333333333) [services on the Google Cloud Platform can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=73.25000000000001) [be divided into two broad categories. 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That's not the focus of this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=96.61949999999999)[class; that won't be covered. In this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=99.00454545454545) [class, we'll understand and work with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=101.29590909090908) [pre-trained models that are available out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=103.09863636363633) [of the box, using simple APIs. We won't](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=105.25133333333333) [focus on how you can build your own custom](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=108.419) [models. Here is a big picture](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=111.41149999999996) [visualization of the services that Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=2&mode=live&start=113.4423333333333) [Cloud AI has to offer. 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You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=17.520090909090914)[don't need to know any ML in order to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=19.863571428571426) [access these APIs and use their powerful](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=22.519857142857134) [features. 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The cool thing about Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=48.75890909090908) [APIs is the fact that it allows even](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=51.4617142857143) [novice programmers to harness the power of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=54) [machine learning. No ML or AI expertise is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=56.633555555555574) [needed to use the ML APIs. In the case of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=59.37099999999999) [Cloud ML Engine, you do need to be a data](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=62.35360000000001) [scientist, you do need to know how to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=64.8476) [build your own machine learning models.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=67.52815384615386) [Programmatic access to Cloud ML APIs are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=69.612)[available using simple programming](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=72.16070000000005) [languages such as Python, Java, C#, etc.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=73.730125) [You do not need to know TensorFlow or any](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=77.07) [deep learning code. If you're working with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=80.01075000000003) [Cloud ML Engine, you need to work with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=82.53757142857144) [TensorFlow models. Behind the scenes,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=85.63071428571432) [Cloud ML APIs use pre-trained models that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=87.4895)[have been built and developed by experts](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=90.02233333333336) [at Google. They've been trained on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=93.05028571428568) [huge datasets available to Google and give](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=95.35533333333335) [amazing results for standard use cases. In](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=97.292) [the case of Cloud ML Engine's tool, you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=99.48416666666662) [need to build a model, you need to train](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=102.0560588235294) [it on your training dataset. The idea](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=105.0742352941176) [behind Google offering these ML APIs as a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=107.35842857142856) [product is to make the common use case](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=109.78814285714279) [easy. The Cloud ML Engine is to make the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=112.32053846153845) [difficult use case possible. Let's also](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=115.285) [understand the differences and the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=118.10066666666668) [similarities between Cloud ML APIs and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=119.77733333333337) [Google's latest offering, Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=122.82599999999998) [AutoML. Cloud ML APIs and AutoML have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=125.79849999999996) [similar objectives in that they want to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=128.56407692307695) [make it easy for the novice programmer or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=131.097) [the developer with not much machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=133.63053846153846)[learning expertise to harness the power of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=135.68991666666668) [powerful machine learning models. Both of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=139.02133333333342) [these offerings are generally applicable](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=141.67380000000003) [for curated common use cases alone. Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=143.54580000000007) [ML APIs simply require you to make the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=146.4834615384615) [right API call, parse in the right data,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=150.1123846153845) [and then you'll get the result. It's an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=153.05907692307701)[out-of-the-box solution for your needs.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=155.90942857142855) [There's nothing much that you need to do.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=157.693) [In the case of AutoML though, some ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=159.73238461538452) [expertise is needed so that you train your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=162.04823076923074) [models well to fit your use case. When](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=164.82484615384604) [you're using the Cloud ML APIs, you're](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=167.36500000000007) [using pre-trained models. On your end,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=169.69372727272727) [there's no training or model development](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=172.59009090909083) [needed at all. When you use Cloud AutoML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=175.15263636363633) [though, there is some training and model](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=177.67918181818172) [development that you need to do. You have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=179.59699999999998) [to have a basic understanding of machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=181.786) [learning and neural networks in order to use AutoML.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=3&mode=live&start=183.84049999999996)

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We'll introduce the Cloud Shell, our](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=9.834300000000002) [terminal on the browser, and we'll upload](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=12.324800000000003) [all of the audio, video, and image files](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=14.687000000000001) [that we'll be using in our demos to Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=17.094999999999995) [Storage. In order to use the Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=21.056124999999998) [platform, you need to create an account.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=23.23099999999999) [Now anybody with a Gmail account can go](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=24.926) [ahead and create an account on the GCP. Go](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=27.415000000000003) [to cloud. google. com and click on Sign](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=30.4053) [in. Once you're there, you can then log in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=34.4157) [with your Gmail account or a G Suite](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=36.65414285714289)[account if you have one. Cloud.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=38.65761538461539) [user@loonycorn. com is the name of my](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=40.75946153846156) [account. I'm going to click on Next. I'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=42.940777777777775) [enter my password here, and I've logged](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=44.840538461538465) [into the Google Cloud Platform. I can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=47.609307692307716) [access my dashboard by clicking on Console](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=50.264692307692314) [at the top right. And this will take me to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=52.6366153846154) [the main dashboard for my project. Now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=55.624999999999986) [when you're working on the GCP, all of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=57.471818181818186) [your resources, whether they're VMs or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=59.182363636363654) [APIs that you plan to use, live within a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=61.09457142857143) [unit called the project. The project that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=64.43485714285714) [you see highlighted here is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=67.01199999999999) [spikey-developers. This is the project](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=68.85033333333331) [that developers in the Spikey Sales org](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=70.53184615384616) [use in order to test out their prototypes.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=72.83107692307694) [A project is a logical building unit in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=75.918) [the GCP and typically different themes](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=78.97066666666667) [within your org will have their own](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=80.8386666666667) [projects. In order to use the Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=83.07675) [APIs, you need to enable billing on your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=85.72408333333334) [project. You need to associate a credit](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=88.18825) [card with this project. Resources used in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=90.6428) [this course should be within the free tier](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=92.90907692307691) [for the Cloud ML APIs. The charges you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=95.13061538461535) [incur while performing the demos in this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=97.71949999999998) [course shouldn't exceed, say, $5. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=100.3145) [navigate to all of the services on the GCP](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=103.66879999999999) [by clicking on this hamburger icon on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=106.12939999999995) [top left of your screen. The first thing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=108.90566666666665) [I'll do here is go to Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=111.77274999999999) [Storage, create a bucket, and upload all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=113.80941666666662) [of the files that I'm going to be using in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=115.4517142857143) [my demos. The Storage option here is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=117.91799999999999) [pinned to the top of my navigation menu,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=120.07399999999994) [because I use it often. It's typically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=122.59171428571429) [lower down in this menu. Here is my Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=125.13828571428571)[Storage page where I can see all of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=128.27206666666666) [buckets that I have within this project.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=130.41646666666674) [Cloud Storage buckets on the GCP are the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=132.5468461538461) [exact equivalent of AWS' S3 buckets or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=135.193) [Azure's Blob Storage. This is the object](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=139.18580000000006) [storage service that GCP offers. I'm going](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=142.3778888888889) [to create a new bucket here where I going](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=144.84782352941178) [to store all of my files. I'll create a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=147.63252941176475) [bucket. I'll call it cloud-ml-api. Bucket](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=150.56900000000002) [names have to be globally unique. Make](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=152.74176923076922) [sure you choose this carefully. Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=155.35115384615378)[Storage buckets can have different storage](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=157.54500000000002) [classes. A multi-regional bucket will be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=159.52499999999992) [replicated across multiple regions. A](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=162.6816666666667) [regional bucket could be present in just](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=165.1883) [one region. Nearline and coldline buckets](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=166.9053999999999) [are for archival storage. The pricing for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=169.40900000000002) [each of these is a little different. I'm](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=172.34270000000004) [going to choose a regional bucket because](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=174.73438461538464) [that's sufficient for my needs. I don't](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=176.43807692307703) [need my object contents to be replicated](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=178.53633333333332) [across multiple regions. Go ahead and hit](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=181.62099999999992) [Create. This will create a new storage](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=184.06600000000006) [bucket, and you can then click on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=186.03125000000014) [Upload files button in order to upload all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=188.3705000000001) [of the files from your local machine. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=190.687125) [will bring up a File Explorer window.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=192.841125) [Choose the files here. This should be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=195.271) [available in the datasets folder in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=197.55109090909093)[downloadable resources available along](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=199.94120000000004) [with this course, and then upload all of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=201.39080000000007) [the files to this Cloud Storage bucket](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=204.383) [that we just created. The files are all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=207.05) [available here. You're going to access](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=209.5789230769231) [them in our demos, one by one. I'm going](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=211.08630769230774) [to edit the permissions on these files by](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=213.68246153846152) [clicking on the three-dot menu on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=216.10421428571428) [right, so that I can access them from my](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=218.00971428571427) [APIs. 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This will allow you to add read](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=228.73721428571412) [permissions to all users. There is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=232.06227272727264) [special kind of group level permission](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=234.4291538461538) [that you can give, to make these files](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=235.72146153846145) [publicly accessible. You want to give](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=237.94336363636367) [permissions to a group, there is a special](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=239.98390909090918) [group called allUsers and you want all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=242.451) [users to be readers for these files. 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I'm going to make this change](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=254.88407142857147) [to all of the files that I have here. All](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=256.9337857142858) [of the files in this bucket are now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=259.3698000000002) [publicly accessible and when I use them](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=261.4022727272727) [with APIs, I don't have to worry about](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=263.42972727272723) [explicit permissions. 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I'll perform all of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=273.916) [command line operations in this demo using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=276.466) [the Google Cloud Shell. The Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=278.97200000000004) [Shell can be activated using this button](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=281.8265454545453) [on the top right. The Cloud Shell is an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=284.58071428571424) [ephemeral VM that is available on the GCP](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=287.6124285714284) [that's associated with every project on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=290.7080000000001) [every GCP account. This is an ephemeral](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=293.21000000000026) [VM. That means if you save something here,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=295.5636666666667) [it can be lost, so beware. The advantage](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=297.769) [of using the Cloud Shell is that it comes](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=300.2695714285712) [pre-installed with all of the utilities](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=303.23100000000005) [that Google has to offer. The Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=305.4030000000002) [SDK and gsutil, both of which are command](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=308.1026153846153) [line tools on the GCP, are available](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=310.4749230769228) [directly in the Cloud Shell. Wait for a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=313.2415000000001) [couple of minutes for the VM to spin up.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=315.98375) [My Cloud Shell has been activated, and you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=317.69) [can see here which project is associated](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=320.08384615384597) [with the spikey-developers project. If you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=322.935) [want to access and view Cloud Storage](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=326.2054615384616) [buckets from the command line, you can use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=328.16707692307716) [the gsutil utility that's available,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=331.1631111111112) [pre-installed on the Cloud Shell. If this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=333.507) [command doesn't work for you, run gsutil](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=335.53763636363635) [config to get access credentials to your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=338.06484615384613) [Cloud Storage buckets. I'm going to use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=341.2541538461538) [the gsutil ls command to list the contents](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=344.01442857142854) [of my cloud-ml-api bucket, and you can see](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=346.80128571428565) [here that all of the files that I uploaded are available here in this bucket.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=4&mode=live&start=349.36261538461525)

[Enabling APIs and Setting up Service Account Keys](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live)

[In this demo, we'll enable all of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=2.319) [Cloud ML APIs that we plan to use in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=4.690200000000002) [demos that follow. We'll also create a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=7.751500000000001) [service account that allows us](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=10.053333333333336)[programmatic access to all of these APIs.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=12.338200000000002) [Click on the hamburger icon on the top](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=16.135) [left to access all of the services on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=17.996142857142853) [GCP. I'm going to choose the APIs and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=20.570769230769226) [Services option and click on Dashboard.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=23.71415384615383) [This will take me to the page where I can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=25.519428571428577) [enable the GCP APIs that I want to use.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=28.068) [Click on the highlighted link here, which](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=31.417928571428572) [says Enable APIs and Services. This will](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=34.315285714285714) [take you to a page where you have a search](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=37.41938461538461) [box. By far the easiest way to get to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=39.986307692307655) [API that you want to enable is to search](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=42.29870588235294) [for it by name. So I'm going to start off](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=44.34028571428571) [one by one. I'm going to search for the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=46.483142857142866) [term speech. This will bring up two APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=48.67785714285716) [that I'm interested in, the Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=50.747) [Text-to-Speech API and the Cloud Speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=53.11099999999999) [API. I'll need to enable them one at a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=55.47499999999998) [time. I'm going to click on Cloud Speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=57.58953333333332) [API here, and I'm going to click on this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=59.40853846153846) [Enable button here. Click on Enable, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=62.23038461538464) [wait for a little bit. The API will be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=64.28166666666667) [enabled, and you'll be taken to the API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=66.93371428571429) [dashboard like you see here on screen. I'm](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=69.46114285714286) [going to use the search box on the top](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=71.33539999999998) [here to search for speech once again, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=73.199) [then click on the Cloud Text-to-Speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=75.55530769230772) [API. Go to the Enable page, click on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=77.42318181818182) [Enable button, and go ahead and enable](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=80.97981818181812)[Cloud Text-to-Speech as well. The next API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=84.0024) [that I plan to use is the Cloud Natural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=86.5762142857143) [Language API. I'm going to search for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=89.04285714285719) [natural, and enable that API as well, then](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=91.08350000000002) [the Cloud Translation API; enable that as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=93.64455555555556) [well. The Cloud Vision API. Go ahead and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=96.94544444444443) [enable this one as well, and then the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=99.93874999999996) [Cloud Video Intelligence API. At this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=103.15685714285715) [point, I've enabled all the APIs that I](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=105.66799999999999) [plan to use. I can go to APIs and Services](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=108.15599999999993) [and see that all of these APIs are now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=111.13256250000002)[available to me. This is the main APIs and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=113.76) [Services page that we saw earlier. It](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=116.74859999999997) [contains a list of all of the APIs that we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=119.102) [have enabled. The next step is for me to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=122.71200000000005) [create a service account to give me](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=124.76649999999997) [programmatic access to these APIs. Now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=126.099) [click on the Navigation menu. Click on IAM](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=128.55245454545457) [and Admin and choose Service accounts.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=132.19899999999998) [Service accounts on the GCP are used for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=135.403) [service-to-service authentication. These](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=138.77500000000006) [are not user accounts. They are not](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=140.07261538461537) [associated with a specific user. This will](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=143.25492307692303) [take you to the main Service accounts](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=145.94707692307693) [page, and you can click on the Create](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=147.41384615384624) [Service Account link on top here, in order](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=149.49230769230775) [to create a brand new service account.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=151.97292307692322) [This will open up a panel on the right.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=153.73900000000006) [You can specify a name of the service](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=155.923) [account. I'm going to call it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=158.27233333333334) [spikey-ml-apis. The GCP automatically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=161.1515) [generates a service account id for you.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=163.2199) [Now you can choose to select a role to be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=165.74180000000004) [associated with the service account. I'm](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=169.05763636363636) [going to choose the project owner role.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=170.90945454545457) [The project owner role will give the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=173.39336363636363) [service account full access to all of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=176.30854545454542)[resources in this project, and some of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=178.7441818181819) [APIs that we work with explicitly require](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=181.57000000000002) [the project owner role. We need to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=184.49600000000007) [download the API key associated with these](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=187.1515) [service account credentials, and we'll do](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=189.4463333333333) [so in the form of a JSON file. Click on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=191.35333333333338) [the Furnish a new private key, and click](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=194.5418571428571) [on Key type JSON. Go ahead and click on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=197.28528571428558) [the Save button. A JSON file will be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=200.20521428571425) [downloaded to your local machine. Make](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=202.68235714285703) [sure you save it to a directory where you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=204.25128571428573) [can find it later. I'm going to call this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=206.518) [JSON file service-account-file. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=209.27800000000005) [give it a more meaningful name if you want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=210.78333333333333) [to. I now have the service account file on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=213.4173333333333) [my local machine. The file has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=215.98854545454535) [downloaded. You can click Close on this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=218.30166666666665) [dialog. You're done. You have the service](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=220.8543333333333)[account credentials on your local machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=223.06699999999995) [now. You're now all ready to start working](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=224.9149999999999) [with the Cloud ML APIs. On this note, we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=227.80074999999994) [come to the very end of this module. In](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=230.69033333333329) [this module, we briefly introduced you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=233.10027272727274) [the various machine learning services that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=235.29318181818186) [the Google Cloud platform has to offer. We](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=237.25390000000004) [saw that we have ML and AI offerings for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=239.97961538461539) [the novice programmer, and for the trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=243.0721538461539) [data scientist. The Cloud ML APIs that GCP](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=245.54366666666664) [offers are pre-trained models behind](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=249.57763636363643) [simple, easy-to-use APIs, making the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=252.339) [common use case easy. If you want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=254.899) [out-of-the-box machine learning models to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=257.91625)[give some wow to your application, Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=259.53166666666664) [ML APIs are what you'll choose to use. Now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=261.98636363636365) [calling these APIs requires no knowledge](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=265.559) [of artificial intelligence or machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=268.3970000000001) [learning algorithms. A novice programmer](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=271.19039999999995) [can use these APIs and harness the power](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=273.22225000000003) [of machine learning models. If your use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=275.35625000000005) [case is a general purpose one, these APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=277.63999999999993) [work very well. If you have a very](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=280.34346153846155) [specific use case, you'll need to train](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=283.08930769230784) [your own custom model. In the next module,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=285.36250000000007) [we'll work with the speech-to-text and text-to-speech APIs on the GCP.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=1fceac8d-b20d-41f3-9e87-60be6b38567d&clip=5&mode=live&start=287.6676)

[Working with Speech and Text Using the Cloud ML APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live)

[Hi, and welcome to this module where we'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=0) [work with speech and text using Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=3.7396923076923083) [APIs. We'll see how we can perform speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=7.499749999999999) [recognition using the speech-to-text API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=10.209100000000001) [and see how we can convert text-to-speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=11.954272727272729) [as well. You'll find that both of these](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=14.70972727272728) [APIs work extremely well and have a very](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=16.966076923076926) [easy-to-use interface. They're built on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=19.115099999999998) [advanced ML models that have been trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=21.29059999999999) [on a huge dataset. They have powerful](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=23.833363636363632) [features, they're easy to use, and they](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=25.705545454545444) [have a free tier of pricing. Working with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=27.90800000000001) [up to 60 minutes of audio a month is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=30.431307692307694) [absolutely free; beyond that, you pay based on your usage pattern.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=0&mode=live&start=33.078692307692315)

[Introducing the Speech-to-Text API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live)

[Let's go back to our visual of all of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=2.391) [machine learning services that the GCP has](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=4.7740769230769216) [to offer and let's see where the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=6.817571428571429) [speech-to-text fits in. We have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=9.14257142857143)[pre-trained models, and these pre-trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=10.8644) [models are exposed using pre-trained ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=12.677900000000001) [APIs. Speech-to-text is one of the common](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=15.096090909090911) [use cases that is covered using this API.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=18.199636363636362) [The Cloud speech-to-text API converts](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=21.938090909090917) [audio to text by using powerful neural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=24.26909090909091) [network models that have been built by](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=27.405727272727265)[machine learning experts at Google, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=29.931333333333328) [trained on a huge dataset. This API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=31.70333333333332) [recognizes 120 languages and their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=34.602636363636364) [variants. The speech-to-text API is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=36.91127272727273)[incredibly powerful, and you'll just be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=38.80939999999999) [getting a taste of what it has to offer](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=40.964) [when we perform our demos. It can do](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=43.237785714285735) [automatic language detection, it can work](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=45.71845454545455) [with real-time audio or prerecorded audio;](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=48.15336363636365) [both of these are possible. The output of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=50.65255555555555) [this API can be in the form of a stream.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=53.56392307692307) [That means you can have the results of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=56.237) [this API operated upon by a stream](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=58.6467142857143) [processing application such as Apache](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=60.836454545454544) [Spark, or you can simply save out the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=62.74872727272726) [results to a file so that you can process](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=65.53249999999998) [it later. The speech-to-text API is also](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=68.14699999999993) [capable of blocking or filtering out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=70.45845454545452) [inappropriate content that you don't want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=72.535) [recognized. It can work with proper nouns](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=75.28299999999999) [as well as dates and phone numbers. So](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=77.74546153846153) [explicit entities such as these are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=80.393125) [recognized. It allows for automatic](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=82.24787499999996) [punctuation and something called speaker](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=84.6358) [diarization. It basically allows you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=87.2343) [know who said what. If there are multiple](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=89.5967777777778)[speakers, you'll be able to attribute](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=92.31863636363639) [certain portions of the speech to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=94.19009090909097) [different speakers. The speech-to-text API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=96.5455714285714) [also allows for multi-channel recognition.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=98.81275) [For example, if you have two people](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=101.229) [talking over the phone, the audio from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=103.09036363636363) [each speaker might be on a different](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=105.22718181818182) [channel, and speech-to-text can work with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=107.73127272727274) [this as well. The speech-to-text API has a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=110.237125) [60-minute free tier. That means you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=114.191) [transcribe 60 minutes of audio absolutely](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=116.98599999999998)[free. After that, it's priced per 15](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=118.77999999999993) [seconds. So speech recognition is 0. 6](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=121.17484615384613) [cents per 15 seconds, and video speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=123.62) [recognition is 1. 2 cents for 15 seconds.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=126.71306666666669) [There are different ways in which you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=130.248) [might access all of the machine learning](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=131.7379230769231) [APIs on the Google Cloud Platform. Here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=133.33585714285712) [are the three most common ways you might](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=135.61666666666667) [use the gcloud command line utility. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=138.4620000000001) [gcloud SDK is Google's SDK, giving you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=140.9625) [tools to work with the GCP using tools](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=143.52800000000002) [from the command line. You can use gcloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=146.44316666666666) [to access speech-to-text and other machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=149.30783333333326) [learning APIs as well, or you can choose](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=151.65250000000003) [to access all of the Cloud ML APIs using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=154.48020000000002) [REST calls from the command line. We'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=157.17840000000007) [show you an example of how to do this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=158.84299999999996) [using the curl utility. If you're](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=160.76)[developing an application in the real](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=162.79509090909096) [world, though, what you'll choose to use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=164.829) [are client libraries. This gives you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=167.19499999999996) [programmatic access to these APIs from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=169.45099999999996) [languages such as Python, Go, Java, C#,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=171.9349999999999) [PHP, and so on. In the demos that follow,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=174.96050000000005) [we'll cover an example of working with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=178.916) [these APIs using the gcloud utility as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=181.16066666666677) [well as REST APIs from the command line,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=183.4928) [but we'll primarily focus on the client libraries.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=1&mode=live&start=186.408)

[Speech-to-Text Using gcloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live)

[In this demo, we'll see how you can call](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=2.75) [the speech-to-text API to perform speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=5.20976923076923) [recognition using the gcloud command line](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=7.516555555555555) [utility. We start off in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=11.15722222222222) [spikey-developers project on the Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=13.220363636363633) [Cloud Platform, and we'll click on this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=14.676727272727266) [button on the top right to activate the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=16.480461538461544) [Google Cloud Shell. The Google Cloud Shell](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=18.553916666666666) [will act as our terminal from which we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=20.716333333333345) [make gcloud command line calls, as well as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=23.681866666666668) [REST API calls. The GCP is constantly](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=27.1416)[adding new features, which makes working](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=29.640818181818183) [with this cloud platform easier. Here is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=31.443545454545458) [cool new feature that we have in the beta](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=34.31461538461541) [version, a web-based code editor, which](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=37.42075) [makes it easier for you to edit source and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=39.22624999999999) [configuration files directly on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=42.904500000000006) [browser. Go ahead and launch this code](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=45.21741666666668)[editor, wait for a minute or so while it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=47.220000000000006) [gets initialized, and you'll see a UI,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=49.53) [which looks kind of like a File Explorer.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=52.31693333333334) [This allows you to edit files right here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=55.502) [within your browser. You don't have to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=57.41981818181818) [switch back to your local machine for file](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=59.24423076923076) [editing. Click on the three-dot menu on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=61.45469230769228) [the top right, and you'll see there are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=63.341571428571434) [other options available here as well. Here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=65.489) [is a menu option to upload a file from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=67.67299999999999) [your local machine to this Cloud Shell VM.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=70.71909090909091) [I'm going to upload the service account](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=73.85) [file. json. This is what contains my](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=76.56755555555557) [service account credentials that will](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=78.99809090909093) [allow me to access the Cloud ML APIs. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=80.65218181818187) [file will be uploaded to your home](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=83.7835714285714) [directory on your Cloud Shell. You can run](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=86.2078125) [an ls-l and find this file there. Another](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=88.79831250000002) [way to check for this file is to go to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=91.336) [Explorer window on your code editor, click](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=94.31700000000001) [on the File menu, and click on Refresh.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=96.77199999999999) [And if you scroll down on the left pane](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=100.056) [here, you'll see service-account-file.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=102.03690000000002) [json, your service account credentials](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=103.76487499999999) [file, which has now been uploaded to your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=106.278) [Cloud Shell VM. In order to get](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=109.35000000000001)[programmatic access to all of the Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=112.07184615384612) [APIs, you need to set up this environment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=115.21153846153838) [variable. You need to set up the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=117.35487499999998)[GOOGLE\_APPLICATION\_CREDENTIALS to point to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=120.08900000000001) [your service-account-file. json, whatever](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=121.74500000000002) [your service-account-file. json is named.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=124.182125) [This is absolutely necessary, and you need](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=127.554) [to have this environment variable set up](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=129.78699999999995) [for all of the demos in this course. If](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=132.0783636363636) [your Cloud Shell session window gets](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=135.10633333333334) [terminated and you need to reinitialize a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=137.02833333333336) [new session, you need to set this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=139.30890909090908) [environment variable up once again. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=141.6850909090909) [demos from here on in will assume that you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=143.68171428571426) [have this environment variable set. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=146.64657142857135) [GOOGLE\_APPLICATION\_CREDENTIALS environment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=150.6926666666667) [variable should point to where your JSON](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=151.8024) [file lives. This should be the path to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=154.3672) [your service account credentials file.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=157.2234545454546) [This is currently in our home directory,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=158.993) [so I simply specify the file name. Let's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=161.26600000000005) [now play the very first audio file that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=163.8280714285714) [we're going to ask our speech-to-text API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=166.14064285714275) [to transcribe. Now this audio file is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=168.53160000000003) [directly from Google's tutorials. 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This is the command that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=185.28700000000006) [you need to specify. Recognize is the name](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=187.3212222222222) [of our API, and gcloud is the GCP's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=189.8638) [command line utility. This is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=192.99339999999998) [pre-installed on our Cloud Shell VM. Ml](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=194.87550000000002) [speech recognize calls the speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=197.50615384615386) [recognize API from our ML Cloud APIs. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=200.03192307692316) [audio file we just played is available in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=203.86623076923078) [a public bucket called](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=206.25207692307694) [cloud-samples-tests. This is Google's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=207.445) [public bucket, and this is a FLAC file.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=209.33566666666667) [FLAC is a kind of encoding. FLAC stands](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=213.117) [for lossless audio codec, and when you use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=215.87115384615385) [the FLAC file format with a speech-to-text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=219.0397692307692) [API, you don't need to specify the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=221.64327272727274)[encoding and the sample rate for your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=224.12) [file. The GCP automatically detects these.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=226.68375000000006) [The speech-to-text API supports other](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=229.914) [encodings as well, such as LINEAR6, which](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=231.92149999999998) [is the wave encoding; MULAW, a full list](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=234.53400000000002) [of encodings that the GCP supports is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=237.35000000000005) [available here at this URL. We specify the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=240.1865454545454) [language code of the speech. The language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=243.03625) [code is en-US. Hit Enter, and make the API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=245.22400000000002) [call, and you'll get the results in a JSON](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=249.22450000000006) [format. You have the results list, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=251.86188888888879) [within that you have alternatives,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=254.07127272727277) [alternatives for the transcription. We](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=255.684) [have just one alternative here with the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=257.9475) [confidence of 98%. The transcript says,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=261.1844545454545) [the audio said, how old is the Brooklyn](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=264.104818181818) [Bridge, and we know this is absolutely spot on.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=2&mode=live&start=270.565)

[Speech-to-Text Using the REST API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live)

[In this demo, we'll see how we can invoke](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=2.274) [the speech-to-text API using the curl](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=4.7835) [utility from our command line. We start](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=7.275250000000001) [off with our Cloud Shell open, and we'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=10.748) [launch code editor BETA. For this demo and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=13.603999999999994) [all of the demos that follow, ensure that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=16.060615384615385) [the GOOGLE\_APPLICATION\_CREDENTIALS](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=18.11784615384614)[environment variable has been set up](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=18.929714285714287) [correctly to point to your service-account](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=22.258) [credentials JSON file. I'm going to create](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=25.744666666666657) [a new file here using the code editor.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=28.492333333333335) [I'll click on File, New, and File, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=30.501) [this will allow me to create a new](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=32.92659999999999) [configuration file containing JSON that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=35.391999999999996) [I'm going to send with my REST API call.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=37.10700000000001) [You can give any name to this file. I've](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=40.18500000000001) [just called it data-linear16. json. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=43.27125) [is the JSON request file for the HTTP](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=45.46875000000001) [request I'm going to make using the curl](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=48.639) [utility. Let's play another bit of audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=52.209666666666685) [here. Listen to the audio carefully, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=54.8585) [see how the speech-to-text transcription](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=57.69757142857143) [works. (Audio) A day with John Milton.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=60.880428571428574) [About 4 o'clock on a September morning of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=66.15459999999999) [1665. Let's now set up the JSON request](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=72.3380666666666) [that we want to make to our speech-to-text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=74.64149999999998) [API using this code editor. Notice the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=76.61783333333332) [structure of the JSON here. We have the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=79.50166666666665) [outer curly braces, and we have two keys](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=82.12033333333328) [here called config and audio. The config](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=84.63009090909088) [key gives information about how this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=86.92745454545455) [request should be processed, and the audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=89.1818181818182) [refers to the audio file that we want to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=91.51546153846155) [process using the speech-to-text API.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=94.23) [Within the config key, we specify how we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=96.30777777777779) [want the file that we send to be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=99.18046153846151) [processed. The encoding is FLAC, the audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=101.60138461538455) [is in U. S. English, and we want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=104.04872727272726) [enableWordTimeOffsets to be false. We](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=107.3377142857143) [don't want to know at time offsets](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=109.75491666666667) [individual words are spoken. There are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=112.65933333333336) [other parameters that you can specify here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=114.79990909090908) [within the recognition configuration as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=116.48309090909086) [well. You can ask for multiple](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=118.08166666666665)[alternatives to the speech recognition.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=120.317) [You can specify a profanity filter. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=122.4797272727273) [can specify additional speech contexts as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=125.40125) [well. The entire list is available here at](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=127.35875000000001) [this URL. And here is an audio file that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=130.18788888888895) [we're going to send to be processed, to be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=132.6295) [recognized. The original of this audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=135.07566666666668) [file is available at this URL on screen.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=137.23466666666673) [Within the audio configuration, you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=140.38527272727268) [specify the URL to where you have the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=142.95218181818169) [audio file stored. Here it's in a GCS](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=145.4926000000001)[bucket, or you can specify the audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=148.68924999999996) [directly in bytes format. Let's now expand](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=151.8969999999999) [our Cloud Shell terminal window. We'll use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=154.76612499999996) [the curl utility from this command line.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=157.1101111111111) [Make sure you have the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=159.27) [GOOGLE\_APPLICATION\_CREDENTIALS environment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=161.77928571428575) [variable set up. The curl utility is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=162.783) [already preinstalled in the Cloud Shell](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=165.39718181818174) [VM. Make a curl http request, specify that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=167.69066666666666) [the content type that you're sending is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=170.88933333333333) [application/json. This is a JSON request.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=174.63649999999996) [Make sure you have the backslash,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=176.55236363636365) [indicating that the curl command is not](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=178.144) [yet complete, and then specify the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=180.69122222222217) [authorization for your request. This is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=184.01500000000001) [the Shell command that will give you the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=187.0883846153846) [access token to authorize you to the APIs.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=188.99792307692303) [Now in case you get permission denied](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=191.32358333333326) [errors, you can run gcloud auth login on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=193.577) [your terminal window, and try again. Make](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=196.4999090909091) [the http request to the speech:recogize](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=199.69899999999996) [URL that you see highlighted here on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=202.85349999999988) [screen, speech. googleapis.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=207.25611111111118) [com/v1/speech:recognize. And the body of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=209.2667777777779) [your request is specified within your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=211.3098) [data-linear16. json file. And here are the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=213.369)[results from the speech-to-text API in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=216.47209999999995) [JSON format. You can see here that we have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=218.99230769230766) [alternatives. There are two segments to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=222.56323076923067) [our speech. The first segment said, a day](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=224.84909090909093) [with John Milton with the confidence of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=227.91960000000003) [96%, about 4 on a September morning of 1665, with a confidence of 88%.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=3&mode=live&start=230.7322000000001)

[Connecting to Datalab](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live)

[In this demo, we'll see how we can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=2.539) [programmatically access the speech-to-text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=4.801545454545454) [APIs using the Python programming](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=6.231571428571429) [language. We'll work with Datalab for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=9.139428571428573) [prototyping. Google's Datalab is an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=12.841000000000003) [interactive tool that allows you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=15.029727272727275) [explore, clean up, and play with data on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=17.37681818181818) [the cloud. Google Cloud Datalab is built](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=19.924) [on top of Jupyter notebooks. If you've](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=22.899000000000008) [worked with Jupyter notebooks before,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=25.68109090909091) [you'll see that you get the same](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=26.738818181818182) [browser-based interactive shell on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=29.139666666666663) [cloud. When you're working on the GCP,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=31.730777777777767) [though, there's one huge advantage to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=33.95600000000001) [working with Datalab. It's fully](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=35.663) [integrated with all of GCP's services. So](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=37.782999999999994) [you can access now just the Cloud ML APIs,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=40.58742857142857) [but other services as well, such as Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=42.93128571428569) [Storage buckets, BigQuery, you name it.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=45.96820000000001) [Google's Cloud Datalab come preinstalled](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=48.961) [with a number of Python libraries that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=50.77100000000001) [makes it easier for you to work with data.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=53.07809090909092) [This allows for easy prototyping. In order](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=55.315) [to work with Datalab, you need to create a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=58.684285714285714) [VM instance that has Datalab installed.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=61.19207142857142) [Let's start with our Cloud Shell terminal](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=62.34299999999999) [window. I'm going to expand this window](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=63.07799999999997) [here so that it occupies the entire](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=66.33814285714288) [screen. I'm going to set a current project](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=70.01914285714292) [to be spikey-developers. You can use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=72.8522) [gcloud config set project command to set](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=75.45185714285712) [the current project. You can use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=78.2708571428571) [datalab create command from your Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=80.75766666666665) [Shell terminal window to create a new VM](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=82.67566666666663) [instance with Datalab installed. Datalab](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=85.8374) [create gcp-ml-api will create a new VM](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=88.16027272727273) [instance called gcp-ml-api. That's the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=92.64918181818177) [name of your Datalab instance. You'll be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=95.46042857142858) [prompted for which zone you want your VM](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=98.15926666666667) [instance to be located in. A zone is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=100.08033333333333)[datacenter within a certain geographical](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=102.90460000000002) [region. Scroll up and choose the zone that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=104.93410000000003) [is closest to you. I'm going to choose](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=107.87145454545455) [us-east1-b. I'll set my selected zone as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=110.88066666666664) [1. Go ahead and click Enter, and wait for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=113.61533333333327) [a minute or two, as your instance will be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=116.61266666666668) [spun up. It might take a couple of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=119.27600000000002) [minutes. Once your instance has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=121.45200000000007) [created, you'll be connected to this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=123.33608333333335) [instance. An SSH tunnel will be set up for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=125.27058333333336) [you, and you should be able to access this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=127.59939999999999)[instance in a browser window. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=130.00245454545453) [connection will remain open until you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=131.94481818181814) [explicitly kill it. You can connect to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=134.07599999999996) [your Datalab VM instance on port 8081.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=136.78266666666656) [That's what you'll see here on this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=139.4463846153846) [message. Now click on this button here on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=142.09292307692303) [the top right. This will allow you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=144.8055000000001) [change your port and connect to your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=147.42742857142855) [Datalab instance. I'm going to change my](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=149.6974285714285) [port to be 8081, and then click on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=151.82066666666674) [CHANGE AND PREVIEW button. This will open](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=154.47506666666686) [up a new browser window that is connected](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=157.64123076923076) [to Datalab. Notice the interface here.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=159.96184615384615) [It's very much like Jupyter IPython](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=162.05680000000004) [notebooks that you might have worked with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=164.329) [on your local machine. I'm going to create](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=165.92818181818188) [a new folder here by clicking on this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=167.82630769230767) [link. This folder is currently untitled.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=169.79492307692297) [I'm going to rename this folder to be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=171.88350000000005) [called datasets, and I'm going to go ahead](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=174.71971428571428) [and upload all of the files that I plan to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=176.77342857142852) [work on within this datasets folder. Click](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=179.9647272727273) [through to the datasets folder that's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=182.65855555555555) [available here, and then click on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=185.08588888888892) [Upload button. I'm going to upload an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=187.78461538461542) [audio file from my local machine, which is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=190.430076923077) [in the raw bytes format. This file, along](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=193.23116666666672) [with all the other files that we use in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=195.7552857142857) [our demos, is available to you as a part](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=198.1351428571428) [of the downloadable resources. Once you've](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=201.32654545454537) [chosen this file, go ahead and click on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=203.32169230769233) [the Upload button on the screen, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=205.2164615384616) [upload this file to your datalab instance.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=207.26118181818183) [You can now create a new notebook where](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=209.596) [you'll write your Python code. Rename this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=212.75353846153848) [notebook to have a meaningful name. I'm](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=215.25625) [going to call it speech-to-text, because](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=217.11754545454545) [that's what we're going to demo, and go](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=218.75881818181819) [ahead and get started. If you look at the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=220.99993333333333) [top right, you'll see that by default,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=223.5805333333333) [Datalab has chosen python2 to be your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=225.76361538461535) [kernel. I'm going to change this to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=228.01707692307684) [python3. So click on the drop-down, choose](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=230.64) [python3. We'll write all of our code in Python 3.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=4&mode=live&start=233.32449999999997)

[Synchronous and Asynchronous Speech-to-Text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live)

[With our Datalab notebook all set up,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=1.955) [we're now ready to get programming. First,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=3.777153846153845) [start off by installing the Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=5.7868) [speech libraries, which you can do with a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=8.921400000000002) [simple PIP install. From within Datalab,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=11.73633333333333) [you can simply call! pip install --upgrade](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=14.109923076923074) [Google Cloud speech. Don't forget the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=17.40907692307692)[exclamation mark at the beginning. Go](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=19.966375000000003) [ahead and import the io module, and import](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=22.254363636363635) [the speech-related Python modules as well](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=25.313272727272718) [from the google. cloud namespace. First](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=27.793999999999993) [set up a speech client. This is the client](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=30.240666666666666) [that we make the API call to a speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=32.95566666666667) [recognition API. This client, when it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=36.052923076923065) [makes the API call, requires two bits of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=38.436307692307665) [information. The first is the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=41.51754545454546) [RecognitionAudio. This is the audio file](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=43.407090909090925) [that we want transcribed. This is located](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=45.311111111111096) [in our Cloud ML API bucket. This is the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=47.74466666666667) [same FLAC file, which contains a short](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=51.324076923076916) [clip about Milton. In addition, we also](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=54.01692307692305) [need the RecognitionConfig, which tells](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=56.62881818181817) [the API how this audio file should be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=58.45109090909088) [interpreted. We indicate that the encoding](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=62.00428571428572) [of this audio is in the FLAC format, using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=63.617692307692316) [the AudioEncoding. FLAC enum, and the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=66.1142) [language is en-US. The actual API call is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=70.12339999999999) [very straightforward. It's simply](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=73.79299999999999) [client-recognize, parsing the config and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=75.63055555555556) [the audio. The response in the JSON format](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=78.55944444444445) [is converted to a Python dictionary, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=81.28399999999996) [stored in the response variable. Let's now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=83.23123076923078) [use a for loop to iterate over the results](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=85.99084615384619) [in our response, and within each result,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=89.2696363636364) [we have alternatives that we want to show.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=91.558) [We access the very first alternative at](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=94.743) [index 0, and print out the transcript. And](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=97.7905) [here are the two transcribed sections from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=101.116) [our audio file. It's as easy as this. Now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=103.06200000000004) [this clip that we worked with before was](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=105.61114285714284) [just a few seconds long. This API can work](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=107.898) [with longer clips as well, such as this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=110.29842857142857) [example. We set up types. RecognitionAudio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=112.907) [and specify a much longer clip. This is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=115.45699999999998) [around 3 minutes long. This clip has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=119.2734) [uploaded as a FLAC file to our Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=122.54166666666666) [API bucket, and we access it from there](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=125.44566666666663) [directly. I'm going to play a 30-second](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=128.233) [snippet of this clip so that you know what](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=130.732) [it sounds like. If you want to hear the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=132.72699999999998) [full version, you can access it from your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=135.60375000000005) [downloadable resources. (Audio) In place](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=138.55275000000012) [of fear, antibiotics, a magic bullet to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=141.05375) [cure all infection, stop bacteria in their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=145.1691666666667) [tracks, and give you protection, but](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=149.73899999999998) [there's a snag, a flaw, a hitch, which](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=153.6238181818182) [Darwin foresaw. As bugs divide and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=157.55036363636367) [conquer, they will have the last hoorah.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=161.0487272727273) [We now set up our recognition config,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=165.453) [which tells our API how to interpret this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=167.3521538461538) [audio. The audio encoding is FLAC, exactly](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=169.92636363636362) [like before. We specify additional](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=173.23863636363632) [information as well. The language code is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=174.95650000000003) [en-GB. It's English, but British English.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=178.0564) [In addition, we specify other parameters](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=181.549) [as well. We want two alternatives in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=183.72849999999997) [results; we don't want just one](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=186.54800000000006) [alternative, which is the default. Because](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=188.641) [this is a much longer video, we call](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=191.28481818181822) [client. long\_running\_recognize.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=195.8052) [Long\_running\_recognize does the same thing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=197.35) [as recognize, but this performs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=199.63142857142856) [asynchronous speech recognition. You don't](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=201.9125) [have to wait around for the results. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=203.7547777777778) [can specify a timeout for this operation](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=205.7988) [as well. This takes in the same two input](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=208.49939999999992) [arguments, the audio config as well as the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=211.3634615384615) [audio itself. We've only specified the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=213.84809090909093) [operation so far. We haven't actually](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=215.92136363636368) [invoked the API. You can invoke the API by](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=217.84575)[calling operation. result and specifying a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=220.509) [timeout. We have specified a timeout of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=223.43014285714278) [300 seconds or 5 minutes. Wait for a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=226.81554545454551) [little bit. This audio clip isn't that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=229.8637272727273) [long. It should definitely return within a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=231.34009090909097) [few seconds, and then you can use a for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=233.1428461538461) [loop to access the results. We've asked](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=235.75) [for the API to specify multiple](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=238.375) [alternatives in the transcript. We access](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=240.7096) [the first alternative first, and print it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=243.26566666666668) [out to screen. You can see here that the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=245.77750000000003) [transcription that was pretty good. There](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=248.66872727272724) [are a couple of things that are wrong](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=250.455) [here, though. The word flaw has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=252.64700000000002) [identified as floor and foresaw has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=254.8745833333333)[identified as for sore. You can access the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=257.226) [second alternative using alternatives at](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=262.1266666666668) [index position 1. And here is the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=264.77375000000023) [alternative transcript that our speech-to-text API has provided.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=5&mode=live&start=270.362)

[Speech-to-Text with Raw Audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live)

[We'll continue with code in the same](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=2.775) [speech-to-text Datalab notebook. Here is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=5.232699999999999) [one last example where we'll use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=7.01) [speech-to-text API, but with raw audio,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=9.544) [audio in byte format. This is the raw](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=12.095500000000001) [audio file that we uploaded to our](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=15.200846153846156) [datasets folder under the current working](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=17.437076923076926) [directly. We'll read in this file in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=19.40533333333334) [bytes format using the Python io module.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=22.064) [We'll store the resulting bytes in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=25.49018181818182) [content variable, audio\_file. read. We'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=28.70028571428572) [read the file, and store it in the content](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=30.672636363636364) [variable. You can parse in these raw bytes](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=33.396363636363645) [to the recognition audio class that you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=36.116799999999984) [instantiate. Recognition audio can take in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=38.53459999999997) [a URL as well as raw bytes. You set up the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=40.29416666666668) [configuration exactly like before. When](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=43.884000000000015) [you're using files in the raw format, you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=45.83446153846154) [need to specify the audio encoding as well](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=48.55815384615386) [as the same rate. The AudioEncoding here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=51.34500000000001) [is LINEAR16, and the sample rate is 16000](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=53.83875000000003) [Hertz. These parameters are not required](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=57.79212499999999) [for FLAC files. GCP can infer those, but](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=60.28412500000001) [for raw audio, these are a must. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=63.827666666666666) [language code asked for is U. S. English.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=67.40588888888888) [This is the same file that we've heard](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=69.637) [earlier, which contains the text, how old](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=71.98166666666663) [is the Brooklyn Bridge, called client.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=74.2469) [recognize, parsing the config as well as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=76.4327) [the raw audio. We'll use a for loop as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=78.91833333333335) [we've done before, to iterate over the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=81.44985714285711) [results and the response, and print out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=83.16585714285708) [the first alternative, the transcript in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=85.96833333333333) [the first alternative, and you can see it is, how old is the Brooklyn Bridge?](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=6&mode=live&start=87.95775000000002)

[Introducing the Text-to-Speech API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live)

[Let's get back to our big-picture](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=2.763) [visualization of the machine learning](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=4.2425999999999995) [services that Google offers. We'll now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=5.540166666666667) [take a look at the text-to-speech API. Now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=7.407166666666668) [Google offers a text-to-speech API that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=10.428333333333335) [allows it to synthesize natural-sounding](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=13.359) [speech with 32 different voices. DeepMind](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=16.561) [was a machine learning and artificial](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=20.144000000000002) [intelligence company that was brought over](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=22.430000000000003) [by Google, and this API applies their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=24.55236363636363) [ground-breaking research on WaveNet, a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=26.933)[deep neural network specifically built to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=29.152999999999995) [generate raw audio. It gives you an option](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=31.548249999999996) [of the kind of voices you want to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=34.38358333333332) [generate. You can generate standard voices](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=36.72366666666668) [or WaveNet voices. WaveNet voices are at](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=38.575833333333335) [the cutting edge of speech synthesis](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=41.61266666666666) [algorithms. You get exclusive access to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=44.44539999999999) [very latest machine learning technology](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=47.73759999999997) [here. Text-to-speech offers more than 30](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=50.355000000000004) [voices in 14 different languages. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=53.395) [input to the text-to-speech API can be in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=56.18857142857143) [the form of plain text, or it can use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=58.85714285714288) [SSML, Speech Synthesis Markup Language,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=62.14733333333333) [that allows you to specify how exactly you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=64.17524999999999) [want the voice to sound. SSML allows you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=67.036) [to add exclamations, pauses, and other](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=70.1088181818182) [modulation to the generated voice. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=72.96645454545457) [specify the text in the form of an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=75.70299999999999) [XML-based markup. The output of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=79.27099999999997) [text-to-speech API is generally in the MP3](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=81.59066666666665) [format, or it can be in the LINEAR16](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=84.08908333333329) [encoded format as well. This API can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=87.113) [generate voices that are very nuanced and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=89.64854545454546) [powerful. Pitch tuning, volume gain](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=92.00881818181819) [control, multiple audio formats, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=94.23950000000002) [speaking rate tuning are also supported.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=96.48114285714286) [Google allows you to explore its APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=98.57) [using its free tier. With standard voices,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=100.97227272727272) [the free tier is up to 4 million](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=103.37175000000002) [characters; with WaveNet voices, you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=106.10975000000008) [go up to 1 million characters for free. If](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=108.46661538461537) [your usage exceeds this free tier limit,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=112.04672727272727) [standard voices will cost you $4 for a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=114.54381818181815)[million characters, and WaveNet voices](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=117.49066666666666) [will cost you $16 for a million characters.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=7&mode=live&start=119.3673333333333)

[Installing Text-to-Speech Libraries](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live)

[In this demo, we'll try out the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=2.243) [text-to-speech API on a Datalab notebook.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=5.297153846153846) [Here is a new notebook on Datalab. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=7.915) [name of the notebook is text-to-speech,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=9.990692307692308) [the current kernel is python3. You can use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=11.781166666666667) [the pip install command to get the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=15.033000000000001) [packages that you need to programmatically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=16.867000000000004) [access this API in Python. I call pip](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=19.025285714285715) [install --upgrade](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=24.351000000000003) [google-cloud-texttospeech. I already have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=26.051000000000005) [these libraries installed. It says](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=28.058999999999997) [requirement up to date. Now when I go](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=29.988999999999994) [ahead and try to import this module,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=32.730714285714285) [you'll find that it'll throw an error.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=34.82671428571428) [This is because the client libraries for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=37.06133333333333) [the text-to-speech API are currently in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=39.399916666666655) [alpha at the time of this recording. They](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=41.93691666666668) [are not completely in a stable state yet,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=45.31483333333333) [which is why, even after calling pip](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=47.66549999999999) [install, I'm not able to import the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=49.966272727272724) [text-to-speech module, and there is an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=52.45) [error. It's possible that by the time](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=54.72314285714286) [you're viewing this course, this error no](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=56.810800000000015) [longer occurs, in which case you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=58.98850000000001) [continue programming. The way I fixed this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=61.41166666666669) [error was to switch my kernel from python3](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=63.74757142857142) [to python2, and within the python2 kernel,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=66.37728571428569) [call pip install on the client libraries](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=69.56550000000003) [once again. So now my kernel is python2.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=72.76444444444444) [I'm going to run a pip install command,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=75.48) [and get the Google Cloud text-to-speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=77.78830769230773) [libraries for python2. At this point, I](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=79.70339999999999) [have the Google Cloud text-to-speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=83.01019999999994) [libraries for both python2 as well as 3.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=85.34236363636364) [Now if I run an import for this module in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=89.042) [python2, this import statement is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=92.79927272727275) [successful. This import works in python2,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=94.84059999999998) [provided you have already installed the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=97.339)[libraries for python3. I'm going to switch](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=100.5796666666667) [my Datalab and notebook to run the python3](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=103.41938461538463) [kernel, and I'm going to import the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=105.85815384615388) [text-to-speech module once again. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=108.36379999999998) [time, this will work. It works in Python](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=110.1805) [3, provided you already have the libraries installed for Python 2.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=8&mode=live&start=112.97650000000004)

[Speech Synthesis in Multiple Languages Using Text-to-Speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live)

[We are now ready to write code to convert](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=1.378) [text to speech. Start off by instantiating](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=4.1545) [the TextToSpeechClient from the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=6.801599999999999) [text-to-speech module. This is the client](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=8.5232) [that we'll use to invoke our API. Specify](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=10.837454545454548) [the input that we want to synthesize using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=13.662636363636365) [this API. This is the texttospeech. types.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=15.91572727272728)[SynthesisInput, and the text that we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=19.018999999999995) [specify is, oh no! My dog has chewed up](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=22.067) [the couch. We can now specify parameters](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=25.663727272727282) [for how we want the resulting voice to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=27.89146153846154) [sound using VoiceSelectionParams. We want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=30.177) [the resulting voice to be in English,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=32.9195) [en-US, and we want it to be a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=36.696333333333335) [gender-neutral voice. If you want to know](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=40.83366666666668) [all of the different kinds of voices that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=42.86728571428571) [are supported by the text-to-speech API,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=44.466142857142835) [you can visit this URL that you see here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=46.28266666666665)[on screen. We now specify an audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=49.31246153846154) [configuration for how we want the output](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=51.99507692307694) [from this text-to-speech API. We want the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=54.938857142857145) [audio to be encoded in the MP3 format. We](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=58.18745454545454) [can now invoke the API using the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=62.139538461538464) [text-to-speech client that we had set up](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=64.27830769230769) [earlier. We call the synthesize\_speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=66.54745454545456) [function on the client. We parse in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=68.40109090909095) [synthesis\_input, the kind of voice that we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=71.37766666666668) [want, and how we want the output to be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=73.99158333333338) [generated in the form of MP3 files. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=77.18526666666672) [audio content is available in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=79.911625) [response. In order to listen to it, I'm](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=81.46337499999997) [going to write it out as an MP3 file,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=83.32543749999998) [output. mp3, in the current working](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=85.387)[directory. So I open up the file, and call](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=88.36985714285717) [out. write and write out the audio](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=91.41950000000001) [content. If I now go to the home page of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=93.65293750000002) [my Datalab instance, you'll see that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=96.19874999999999) [output. mp3 is available there. I'm going](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=98.17325000000002) [to click on output. mp3 and play it.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=100.89580000000001) [(Audio) Oh no! My dog has chewed up the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=103.571) [couch. That worked pretty well in English.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=107.55349999999996) [Let's now try this API, but we'll use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=109.88327272727271) [Spanish as our language. Our synthesis](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=112.79325000000001) [input this time is text specified in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=115.46775000000004) [Spanish. Let's change our voice selection](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=118.85660000000001) [parameter so that it's a little different.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=121.934) [The language code is es-ES, indicating](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=124.318) [that we want the voice to be synthesized](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=126.19692307692311)[in Spanish. We also want the voice gender](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=128.81691666666669) [to be female. Again, a little different](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=132.2402500000001) [from earlier. We'll now call the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=135.31933333333336) [synthesize\_speech API once again and parse](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=137.54766666666663) [in the three inputs as before. We'll then](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=139.54366666666655) [parse the response and write it out to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=142.37800000000004) [output\_es. mp3. Let's now listen to what](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=145.76771428571428) [this incise speech sounds like. (Audio) Mi](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=150.04021428571426) [perro ha masticado el sofa. I don't know](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=154.17742857142858) [about you, but that sounded pretty](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=157.66025) [realistic to me. That was a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=159.19875) [realistic-sounding voice. We successfully](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=161.47025000000002) [synthesized speech in two different languages.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=9&mode=live&start=163.47325000000006)

[Text-to-Speech Using SSML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live)

[If you want the speech generated by this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=3.274) [API to be more nuanced, contain](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=5.123846153846153) [exclamations, pauses in all the right](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=6.665363636363637) [places, and have the right modulation, you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=8.977545454545453) [can choose to specify your input in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=11.737214285714284) [form of SSML. SSML stands for Speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=14.985785714285708) [Synthesis Markup Language, and it's an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=18.006800000000005) [XML-based markup, which allows you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=20.711) [specify how you want a particular part of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=23.281727272727274) [your text to sound. We've annotated the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=26.938571428571432) [text that we're going to parse in to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=29.708249999999996) [text-to-speech API with SSML. Let's take a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=31.959) [look at this annotation. The text that we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=34.69090909090911) [want synthesized is wrapped in this speak](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=37.73533333333332) [tag. You can specify nested tags within](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=40.33116666666663) [speech. Here you want the particular text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=43.364285714285714) [to be spoken as an expletive. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=46.14950000000001) [interpret-as attribute allows you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=49.042625) [specify this. The speaker then goes on to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=51.80075000000001) [say two more sentences. My dog has chewed](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=54.964999999999996) [up the couch. Now I have to buy a new one.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=57.399266666666676) [Between these two sentences, there is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=60.315) [pause of 2 seconds. Let's set this up as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=62.5868181818182) [our synthesis input to the text-to-speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=65.78208333333335) [API. We specify the SSML attribute,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=68.05858333333337)[indicating that this text is in markup.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=71.01341666666669) [The voice selection params are the same as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=74.619) [before. The language code is en-US, and we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=76.6474444444444) [want a gender-neutral voice. We specify](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=79.55145454545452) [the audio\_config once again to get the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=81.792) [result in the MP3 format. Once we get the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=84.333) [result, we write the output out to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=88.13039999999998)[output\_ssml. mp3 file. Open up this file](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=92.09519999999995) [and listen to the resulting audio. This is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=94.5036) [what it sounds like. (Audio) Beep. My dog](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=96.91333333333333) [has chewed up the couch. Now I have to buy](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=101.22488888888891) [a new one. Notice that the text-to-speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=106.02946153846153) [API automatically bleeped out the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=108.80630769230767) [expletive. And on this note, we come to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=112.57419999999999) [the very end of this module where we got](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=114.72337500000005) [hands-on practice working with the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=116.403) [speech-to-text and the text-to-speech APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=118.64612499999998) [on the GCP. The text-to-speech API is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=120.90036363636365) [brand new, and runs on cutting-edge](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=124.07963636363641) [technology from DeepMind. It supports 30+](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=126.87028571428573) [voices in 14 languages. We also saw how we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=129.98514285714288) [could access the Cloud ML APIs using the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=133.70707142857142) [gcloud command line tool or the REST API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=136.0287857142857) [from the command line. If you're planning](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=138.6767272727273) [to integrate these APIs with your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=141.0128) [application though, what you really need](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=142.9904) [is programmatic access, which is why there](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=145.38187499999998) [are client libraries to enable you to do](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=147.8537692307692) [this. In the next module, we'll study and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=150.32330769230757) [work with language-based APIs for natural language processing and translation.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=e77235f3-dee3-4f49-bfc3-484d6523d6ef&clip=10&mode=live&start=153.10941666666665)

[Working with Language Using the Cloud ML APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live)

[Hi, and welcome to this module where we'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=0) [see how we can use Cloud ML APIs on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=3.5354285714285716) [GCP to work with language-related](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=7.8302000000000005) [problems. We'll work with two kinds of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=9.8842) [APIs, one for natural language processing,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=12.236272727272729) [and another for translation. These are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=14.292888888888887) [separate offerings from the GCP, and they](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=16.926222222222222) [allow you to do different things. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=19.50036363636364) [natural language API is for content](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=21.912875) [classification, sentiment analysis, syntax](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=24.17412499999999) [analysis, extracting entities from text.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=26.445874999999997) [If you're a new e-commerce organization](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=29.604) [and you simply don't have the data to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=31.6145) [build your own sentiment analysis model,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=34.388666666666666) [Google Cloud APIs are a great way for you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=36.67966666666666) [to start off with. Natural language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=39.70123076923078) [processing of product reviews will help](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=41.49430769230772) [you figure out what entities you're users](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=43.45745454545455) [are talking about, and how they feel about](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=45.847) [those entities. The Translation API is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=48.674200000000006) [meant for language translation, and it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=50.759545454545446) [supports a huge number of languages you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=52.827363636363614) [can translate from one language to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=54.9405) [another, and get a pretty close](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=56.709) [reproduction. The Translation API is built](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=59.96100000000001) [on the same technology that powers Google Translate.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=0&mode=live&start=65.503)

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Information such as people,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=22.556333333333335) [places, events, landmarks. This API can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=25.389) [also be used to understand sentiment of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=28.09663636363636) [the text as a whole, or sentiment related](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=31.0265) [to individual entities in the text. It can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=33.72050000000001) [be used to parse intent as well. Just like](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=36.56600000000001)[with other APIs, the Natural Language API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=39.72716666666667) [is very powerful, and offers a number of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=41.922250000000005) [different features such as syntax](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=44.558909090909104) [analysis, that allows you to tokenize your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=46.25481818181821) [input text, recognizes parts of speech,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=48.962909090909086) [and gives you additional linguistic](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=51.30833333333333) [information about these tokens and parts.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=53.16499999999999) [You can also use these APIs to figure out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=55.33384615384616) [what exactly a person is talking about;](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=58.49838461538463) [whether it's a person, a location, a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=60.59239999999999) [product, a landmark, or any kind of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=62.92945454545454) [object. This is called entity recognition.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=65.67218181818181) [You can also extract the sentimental data](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=67.77750000000003) [to specific entities. The Natural Language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=70.3316) [API can also be used for content](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=72.85339999999998)[classification or categorization. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=76.27962499999998) [split content into 700+ predefined](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=78.69166666666668) [categories that the API is capable of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=80.84333333333336) [learning. New, technology, business, all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=83.96718181818181) [of these are categories. And finally, the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=86.39763636363634) [Natural Language API provides this all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=89.593) [important functionality, sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=92.09500000000001) [analysis of the text as a whole or in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=93.20871428571428) [parts for entities. Just like the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=96.34392857142853) [speech-related APIs that we studied](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=98.79466666666666) [earlier, natural language processing is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=101.13744444444443) [powerful. You can in fact, extra sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=102.96466666666669) [from audio if you use the speech-to-text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=105.56118181818182) [API along with the Natural Language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=108.70481818181821) [processing API. Developers in the Spikey](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=111.33766666666666) [Sales organization are especially excited](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=113.85744444444443) [about the ability to combine APIs together](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=115.923) [and offer their customers the ability to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=118.76245454545453) [leave voice reviews and then analyze their](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=121.63669230769231) [audio for sentiment. The Natural Language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=124.5573076923077) [API has a free tier of usage, up to 5000](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=126.96485714285714) [units are completely free for sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=130.8177142857143) [analysis, entity analysis, syntax](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=133.90299999999996) [analysis, everything. If you go beyond the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=135.83775) [free tier of usage, the pricing depends on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=138.04100000000003) [your usage pattern, and the pricing is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=140.55854545454548)[different for the kind of analysis you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=142.761) [want to perform. Whether it's entity](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=144.679) [analysis, syntax analysis, content classification, and so on.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=1&mode=live&start=147.214)

[Content Classification Using the Natural Language API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live)

[In this demo, we'll see how we can use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=2.414) [Natural Language API from GCP's Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=4.623285714285715) [APIs to perform content classification,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=7.010749999999999) [detecting the various categories to which](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=9.517) [a particular piece of text belongs. Once](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=11.579999999999995) [again, I'd like to remind you that for all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=13.906461538461539) [of the client libraries to work, you need](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=16.27761538461538)[to set up the environment variable, Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=18.59572727272728) [Application Credentials and point it to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=20.8144) [the JSON file, which contains your service](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=23.126800000000003) [account keys. We'll write all of the code](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=26.967) [for this demo using the classify-text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=30.508428571428578) [Datalab notebook. Now the code here is in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=32.70785714285715) [Python 3 once again. In order to install](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=35.08380000000001) [the Natural Language API onto your Datalab](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=37.58045454545456) [instance, you need to use the pip install](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=40.033) [command,! pip install --upgrade](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=42.622333333333344) [google-cloud-language. Set up the import](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=46.91299999999998) [statements for the language model from the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=48.11266666666667) [Google Cloud namespace, and other modules](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=50.21208333333335) [from within language as well. The client](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=52.56600000000001) [that we'll use to invoke the Natural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=55.27553846153845) [Language API is the LanguageServiceClient.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=57.56992307692305) [Instantiate the language.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=59.7156) [LanguageServiceClient and assign it to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=62.21940000000001)[client variable. Here is a piece of text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=64.58971428571428) [that we're going to analyze. This is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=67.04685714285708) [review of the Airbus 380, and it's a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=69.68208333333332) [pretty nuanced review. It speaks of its](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=72.335) [pros and cons. It talks of the preferences](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=74.64499999999998) [of airlines and passengers, and then](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=77.1972222222222) [speaks about how competitive the A380 is.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=79.25011111111112) [This text that we want to analyze should](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=82.061) [be instantiated using the document class,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=84.65633333333332) [types. Document. You parse in the text in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=86.80071428571428) [the content input argument. Content is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=90.18757142857142)[equal to text, and you basically define](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=92.49884615384616) [the kind of text that you want to parse in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=94.66130769230772) [the type input argument. This API can work](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=97.49119999999998) [with plain text. You can use this API to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=99.602) [analyze HTML markup as well. Content](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=101.96000000000001) [classification can be performed by calling](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=105.316125) [the client. classify\_text function. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=107.302875) [parse in the document to classify\_text,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=109.4611111111111) [and then you extract the categories in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=112.30940000000001) [classification. The categories are a list](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=116.82460000000006) [of categories or classes, which can be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=119.12066666666666) [applied to this particular piece of text.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=121.545) [We can run a for loop to iterate over all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=123.27049999999998) [the categories and print out the name of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=125.73225000000001) [the category, as you see on screen. For](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=127.69558333333337) [each of these categories, the Natural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=130.17399999999992) [Language API also returns a confidence](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=132.23466666666667) [score. How confident it is that the text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=134.5886666666667) [belongs to a particular category. We'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=137.57100000000003) [print out the confidence score as well.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=139.675875) [Once you execute this code, you'll see](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=141.46) [that our text has been classified into two](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=143.31675000000007)[different categories. The first category](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=145.8514) [with the confidence of 86% is Business and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=147.86540000000008) [Industrial/Transportation and Logistics.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=152.10500000000008) [The second category with the confidence of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=153.822) [74% is Travel or Air Travel. As you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=156.8416923076923) [see, both of these categories are highly](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=160.36969230769228) [relevant and apply equally well to our text.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=2&mode=live&start=162.56230769230757)

[Entity Analysis Using the Natural Language API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live)

[We'll continue with the same demo in this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=2.045) [clip. We are performing text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=4.058333333333332) [classification using the Natural Language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=5.909599999999998) [API on the GCP. Parse in the same](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=7.909099999999997)[document, which contains the review of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=10.231307692307686) [Airbus A380 to the client.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=12.482375) [analyze\_entities function. This is an API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=15.499249999999998) [that allows you to figure out what exactly](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=18.038470588235295) [the text is talking about. Once the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=20.703411764705887) [analysis is done, we want to extract the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=22.869615384615386) [entities that were found in the text.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=24.872076923076932) [Information about the entities are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=26.95533333333334) [returned in the form of a list. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=28.62075000000001) [use a for loop to iterate over every](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=31.262399999999996) [entity, and you can print out the name of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=33.45226666666666) [the entity and other relevant information,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=35.971538461538444) [such as the entity's salience. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=37.82416666666667) [salience code determines how important or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=40.4901) [central this particular entity is to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=43.010699999999986) [text. Then this API parses the entities in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=45.60071428571429) [your text. Additional metadata information](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=48.26014285714287) [such as Wikipedia URLs are also available.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=50.170300000000005) [We'll print those out as well. And here is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=53.076) [a list of all of the entities that the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=55.956) [Natural Language API found within our](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=58.9683) [text, and you can see that these entities](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=61.1529) [are very relevant. It talks about the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=63.69819999999999) [Airbus A380, with the salience score of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=66.24899999999998) [41%. That's relevant. You can also see](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=69.07699999999996) [that amongst the metadata, we have the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=71.77419999999998) [right Wikipedia reference to the Airbus](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=74.6992) [A380. The mid id that is returned here is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=77.49160000000002) [something that is relevant to Google. Now](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=80.60785714285714) [this entity extraction is powered by](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=82.9713) [similar technology that powers Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=85.22309999999997) [searches entity extraction, and this mid](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=87.08919999999999) [score is related to that. It's nothing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=89.30979999999995) [that we need to look at. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=91.58136363636363) [analyze\_entities function figured out a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=93.8044) [more general reference as well to Airbus.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=95.73140000000002) [The Wikipedia link for Airbus is also](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=98.76999999999998) [included. This function is able to extract](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=102.26299999999995) [more abstract information from your text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=104.45018181818182) [as well, such as the fact that other](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=106.13746153846154) [entities that are referenced here are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=108.38115384615384)[engineering the aviation market and flights.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=3&mode=live&start=111.503)

[Content Classification on a Text File Stored in Cloud Storage](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live)

[It may not always be possible for you to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=2.159) [parse in the text that you want to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=3.8689999999999993) [classify in the form of a string within](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=5.666666666666668) [your code. You'll want to reference to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=8.297333333333338) [text that's stored on a URL somewhere.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=10.217083333333335) [This is possible as well when you use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=11.984) [classify content API. We continue with the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=15.729500000000005) [same classify-text Datalab notebook, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=18.511500000000005) [instantiate a document with text to parse,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=20.370384615384616) [but this time the text is available in a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=22.648076923076914) [text file that is stored on our Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=25.61528571428571) [Storage bucket. In such situations, you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=28.295857142857137) [need to specify the input argument,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=30.296) [gcs\_content\_uri and point to the text file](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=32.291) [on GCS. The text in the file that we're](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=36.0142222222222)[about to analyze is shown to you on the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=38.75239999999998) [right side of your screen, and it contains](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=40.91716666666667) [some information about dogs, specifically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=42.926500000000026) [Labradors, Golden Retrievers, and mongrels](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=44.75622222222223) [that can be found on the streets in India,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=47.4467777777778) [sometimes called Indie dogs. There are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=51.973363636363615) [also some references to music and bands in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=54.775181818181814) [there. Let's now invoke the classify\_text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=58.09590909090907) [function and classify this text into](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=60.16399999999999) [categories and extract these categories.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=62.2505) [We'll use a for loop to iterate over all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=64.418) [of the categories that exist in this text,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=66.73100000000005) [and print out the category name. We'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=69.06700000000002) [also print out the confidence score for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=71.46463636363636) [each of these categories, because that's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=73.53409090909089) [interesting to know. Run this and you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=75.45150000000001) [see that the analysis was close to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=78.3362307692308) [perfect. Yes, indeed. This piece of text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=80.93215384615391) [talks about pets and animals, specifically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=83.1820909090909) [pet dogs. The confidence is 99%. It talks](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=85.26528571428572) [about hobbies and leisure. Maybe the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=89.14085714285713) [reference to music put that in. Arts and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=91.45642857142852) [entertainment is at 55%. The references to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=94.51216666666666) [Beatles and other bands is probably](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=97.10274999999994) [responsible for this category. The Natural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=99.96714285714285) [Language API supports around 10 languages](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=103.00907692307693) [at this point in time. German is not](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=105.11830769230774) [amongst them. Here is some text in German.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=107.79645454545457) [We'll instantiate a document, and parse](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=110.251) [this text into our content classification](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=112.93115384615382) [API. Notice that the content is the text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=115.61130769230763) [that we just wrote in German, and it's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=118.11923076923074) [plain text. Let's call classify\_text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=121.04974999999999) [document\_de, and extract the categories,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=123.95912499999997) [and you'll see that this results in an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=125.74469230769233) [error. The error clearly says that the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=128.152076923077) [German language is not supported. This API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=130.6757272727273) [is constantly evolving though, so support](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=133.22799999999998) [for the most widely used languages should be added soon.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=4&mode=live&start=135.32799999999995)

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Let's see how we can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=9.21836363636364) [perform sentiment analysis using GCP's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=12.24546153846154) [Natural Language API. We'll write code for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=14.538923076923082) [this demo in Python 3, using a new Datalab](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=17.229153846153842)[notebook instance called](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=20.186) [sentiment-analysis. Just a reminder here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=22.28225) [once again, in order to have your client](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=24.163333333333334) [libraries work, you need to set up the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=26.528)[environment variable, Google Application](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=29.651999999999994) [Credentials, and have it point to your](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=31.078200000000002) [service account credentials stored in a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=33.33640000000001) [JSON file. Set up the import statements](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=36.32328571428573) [for the Python modules that we plan to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=38.52328571428571) [use. We'll use the same package that we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=40.33814285714285) [installed earlier for Google Cloud natural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=42.85341666666668) [language processing, and we want to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=44.81944444444444) [instantiate the LanguageServiceClient, the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=46.8081111111111) [same client that we've used in our earlier](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=48.21518181818181) [demo. Here is an example of a positive](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=51.19190909090907) [review from the Spikey Sales e-commerce](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=53.98799999999999) [site. It talks about a refurbished camera.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=56.06571428571427) [There is a wow in there, and there a bunch](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=58.91849999999999) [of exclamation marks. We'll instantiate a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=62.90318181818181) [document object as before with this plain](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=65.12045454545455) [text review. Remember, you can parse in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=67.73175000000002) [HTML here as well. You can invoke the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=70.46677777777778) [sentiment analysis API using this client](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=73.45199999999998) [by calling the client. analyze\_sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=75.54449999999996) [function. It takes as its input the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=77.53800000000001) [document that you just instantiated, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=80.562) [we want to extract the document\_sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=82.63363636363637) [from the results. The result of running](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=84.90655555555556) [sentiment analysis on this document will](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=88.73244444444445)[give you two pieces of information that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=90.62649999999996) [you might find interesting. The first is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=92.513) [the sentiment score. The sentiment score](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=94.72079999999998) [ranges between -1 and 1, and gives you the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=96.85015384615383) [overall emotional leaning of the text.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=100.39961538461532) [Positive scores are, of course, positive](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=102.87233333333333) [sentiment. The sentiment score is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=105.36633333333333) [normalized to be within the -1 and 1](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=107.47184615384613) [range. The sentiment magnitude is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=110.8515384615384) [measure of how strongly the sentiment was](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=112.65553846153848) [expressed. This is not normalized. So if](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=114.58969230769236) [you have very long sentences expressing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=117.37350000000002) [strong sentiment, either positive or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=119.881) [negative, this magnitude will be higher.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=121.96054545454548) [Magnitude is a value between 0 and +](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=124.456) [infinity, indicating the strength of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=127.45400000000005) [emotion. You can see from the result of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=129.578) [our analysis here that the sentiment is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=132.078) [positive. The sentiment score is 0. 5, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=134.5451) [you can see the magnitude is 1. 0, so it's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=137.69235714285713) [positive and quite decently positive, but](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=140.76592857142856) [not overly strong. Let's take another](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=143.8025) [example here, this one of a negative](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=146.5527272727273) [review. It's a much longer and stronger](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=148.03609090909103) [negative review, which talks of a camera.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=150.2663076923077) [The person is clearly very unhappy.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=152.621)[Instantiate a document object with this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=155.333) [review text. Parse this document into the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=158.1138) [analyze\_sentiment function, and extract](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=161.51860000000002) [the document\_sentiment, and print out the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=163.10466666666665) [sentiment score as well as the sentiment](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=165.304) [magnitude. You can see here that the score](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=167.49587500000007) [is again between -1 and 1. The score is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=170.47653846153852) [-0. 8, indicating a pretty strong negative](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=174.06145454545458) [sentiment, but the actual magnitude is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=177.09118181818192) [indicated by the sentiment. Magnitude 2. 4 is very strongly negative.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=5&mode=live&start=179.2856666666666)

[Introducing the Translate API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live)

[Here is our big-picture visualization of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=2.435) [Google's machine learning services. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=4.371200000000001) [can see that the Translate API is under](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=6.078363636363636) [pre-trained models. The Google Translation](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=9.409272727272725) [API offers fast, dynamic translation of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=11.645700000000001) [source text to a destination language.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=14.453100000000003) [This is a very robust, highly tested, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=16.62) [scalable API that performs translation on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=19.389181818181818) [the fly. It supports many languages, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=21.529545454545456) [it can also auto-detect the source](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=24.4755) [language. The Translation API has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=27.154500000000002)[around for a while, and it uses the same](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=29.17385714285715) [technology that powers Google Translate.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=32.005) [Over 100 different languages are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=33.90388888888888) [supported, and you can use this API at](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=35.76469230769231) [scale, to translate large volumes of text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=38.49823076923075) [in production. You may not always be aware](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=40.81438461538462) [of the source language in which your text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=43.34607692307693) [has been specified, and that's okay as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=45.67700000000001) [well when you're using this API. There is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=47.8332) [source language detection. It'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=50.38066666666667) [automatically detect the right language,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=51.554000000000016) [and perform the translation for you. Based](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=53.182500000000005) [on the documentation that I read at this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=55.696666666666665) [point in time, this API does not offer a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=57.84600000000001) [free tier. The pricing for this API is on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=60.26375) [a per-character basis, and it costs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=62.681375) [roughly around $20 for a million characters.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=6&mode=live&start=67.95)

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[The Spikey Sales organization is thinking](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=2.209) [of offering their website and web](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=4.2826) [application in multiple languages that are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=6.437461538461538) [local to a specific country. They want all](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=8.754846153846154) [of their reviews to be translated to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=11.504769230769229) [local language, and they're exploring the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=13.68815384615384) [Cloud Translation API for this. We'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=16.238444444444443) [write this code for this demo in a new](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=19.005923076923075) [Datalab notebook instance. This is the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=21.363230769230753) [text-translation demo. You need to install](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=23.360454545454544) [the translate libraries first before you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=25.78336363636363) [get started. Use! pip install --upgrade](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=28.412600000000005) [google-cloud-translate. Go ahead and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=31.145) [import the translate model from the Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=33.50855555555556) [Cloud namespace and instantiate the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=37.514) [translate\_client. You can programmatically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=40.14150000000001) [access the list of all of the languages](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=41.59425) [that this API supports by calling](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=44.06691666666667) [translate\_client. get\_languages. This will](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=46.920285714285725) [return a list. You can run a for loop to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=48.44571428571429) [iterate through this list and print out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=50.98428571428572) [all of the languages. And you can see here](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=53.369777777777784) [that this list is huge. This is one of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=56.336) [earliest APIs that Google released, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=60.055) [it's very powerful. Let's take some simple](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=62.761) [text that we want to translate. This text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=65.00640000000001) [is something that I wrote up about dark](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=67.06754545454547) [chocolate. I love dark chocolate with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=69.95772727272734) [almonds. If I want to localize the Spikey](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=71.97976923076922) [Sales app and website to focus on a French](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=74.637) [audience, I might want to translate to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=77.36464285714285) [French language. You specify the text, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=79.99000000000001) [you can specify the target language.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=82.65799999999999) [Target language here is fr. Once you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=85.34600000000003) [receive the translation result, you get a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=88.01381818181817) [bunch of information that comes along with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=89.51118181818175) [the translation. The first is the input](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=91.94114285714288) [text that you parsed in originally. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=94.27063636363634) [is the text that you specified in English.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=96.31944444444444) [Notice that we haven't specified the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=98.035) [source language for the text. We also have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=99.85736363636363) [the translated text, which we can unescape](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=102.60654545454544) [using html. unescape, and we can also see](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=105.47781818181812) [what source language Google detected for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=109.33963636363637) [us. Let's extract the detected source](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=112.2) [language from the translation results.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=114.86400000000002) [These print statements should display the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=117.084) [results on your screen. You can see the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=118.47900000000001) [original text and the French translation.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=120.75380000000003) [You can also see that the detected source](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=122.771) [language was en. We'll now translate the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=126.41390909090914) [same piece of text to a different](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=128.68966666666668) [language. The language that we have chosen](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=130.28158333333337) [here is th or Thai. You can choose another](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=132.66463636363633) [language if you want to explore and play](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=135.41238461538467) [around with this API. We receive our](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=137.31515384615398) [translation results right away. We use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=139.77059999999994) [html. unescape and here is our translated](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=142.36533333333333)[text in Thai. And this brings us to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=146.27249999999998) [very end of this module where we studied](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=149.19339999999994) [the language-related APIs that the Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=150.85526666666652) [Cloud has to offer. We specifically](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=153.03188888888891) [focused on the Natural Language and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=155.50660000000002) [Translation APIs. We saw that the Natural](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=158.20540000000008) [Language APIs offer powerful and rich](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=160.66583333333327) [features for content classification and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=162.5388333333332) [labeling, sentiment analysis, entity](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=165.31588888888894) [analysis. We also saw how we could use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=167.78077777777787) [Translate API to perform translations at](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=171.28553333333326)[scale. The Translation API supports over](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=173.45193333333322) [100 languages and is extremely robust. In](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=175.98981818181815) [the next module, we'll focus on vision and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=178.88863636363638) [video intelligence. We'll use Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=181.1817272727274) [APIs to perform image recognition and video recognition as well.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=fab04663-c2e3-4586-b88f-e396994f1c89&clip=7&mode=live&start=183.24881818181814)

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[Hi, and welcome to this module where we'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=0) [see how we can use the Google Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=3.214285714285715) [APIs to work with images, as well as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=6.81325) [videos. Image recognition and video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=9.981916666666667) [detection are important pieces of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=11.721555555555554) [functionality that you might want to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=13.401) [include in your application, which is why](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=15.290399999999998) [the Vision and Video Intelligence APIs are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=17.88725) [so useful. Developers at the Spikey Sales](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=21.007500000000004) [organization want to use these APIs to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=23.78525) [categorize their very large catalog of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=26.426) [product images. The vision APIs have the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=29.8595) [ability to detect faces, features within](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=32.52622222222222) [faces, landmarks, objects, and even scan](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=34.76927272727272) [for explicit content. Both Vision and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=37.845090909090885) [Video Intelligence APIs have the ability](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=40.53581818181819) [to classify or categorize content against](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=42.841454545454575) [pre-built labels. The Video API is capable](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=45.528666666666666) [of detecting scene changes within a video.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=48.35216666666666) [It can also detect when the shot itself](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=50.962) [changes, and it can also extract](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=53.340461538461525) [information about specific segments in your video.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=0&mode=live&start=55.827)

[Introducing the Cloud Vision API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live)

[Here is our big-picture visualization of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=3.107) [all of the machine learning services that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=4.9910000000000005) [Google has to offer, and the pre-trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=7.206090909090909) [ML APIs. We have the Vision API and that's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=9.463909090909095) [what we will discuss here. The Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=12.255083333333339) [Vision API is incredibly powerful and can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=14.270285714285716) [be used for a wide variety of use cases.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=15.958285714285722) [It can classify images into thousands of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=18.789666666666662) [categories. It can simply say sailboat, or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=21.634583333333318) [it can recognize specific landmarks as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=24.177500000000006) [well, such as the Eiffel Tower or the Taj](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=26.314) [Mahal. It has the ability to detect faces,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=29.7295) [features within faces, and also extract](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=32.7809) [emotions from facial features as well.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=35.28266666666668) [This API can also be used for optical](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=37.996) [character recognition or OCR. It allows](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=40.993333333333354) [you to find and read printed words](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=43.342499999999994) [contained within images. You'll find a use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=46.31924999999998) [for the Cloud Vision API if you're](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=48.34023076923077) [interested in performing label detection,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=49.644384615384624) [landmark detection, face detection, or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=51.54657142857143) [even logo detection. The Optical Character](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=54.1094)[Recognition or OCR feature is often used](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=57.249800000000015) [along with the Translate feature to read](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=60.26999999999999) [science within Google Apps. It can be used](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=62.80749999999997) [for handwriting recognition, as well as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=65.62210000000002) [web detection. It will allow you to find](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=67.64615384615385) [similar images such as the one you're](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=70.24123076923078) [seeing on the web. The Cloud Vision API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=72.34428571428575) [offers a free tier followed by usage-based](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=74.67114285714294) [pricing. Within the free tier, you can use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=77.51457142857141) [up to 1000 units per month, a thousand API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=80.11269230769234) [calls, beyond which you'll be charged](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=83.11007142857142) [based on your usage pattern. The pricing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=85.38021428571426) [changes based on what you use this API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=87.7569090909091) [for, whether it's for label detection,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=89.6965454545455) [safe search, logo detection, or face detection.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=1&mode=live&start=91.97344444444443)

[Label Detection](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live)

[In this demo, we'll see how we can use the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=2.905) [client libraries offered by the Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=5.45857142857143) [Vision API to perform image analysis.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=7.5915) [We'll write the code for this demo using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=10.926) [Python 3 in a new Datalab notebook](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=13.187714285714291) [instance, which is called analyze-image.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=15.331) [Once again, I'd like to remind you that in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=17.566) [order to get programmatic access to the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=20.378153846153836) [Cloud ML APIs, you need to set up the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=22.51276923076923) [environment variable, Google Application](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=25.16707692307692) [Credentials, and have it point to the JSON](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=26.6098) [file that contains your service account](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=29.761625) [keys. In order to use the Cloud Vision](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=32.60337499999999) [APIs, you need to do a pip install in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=34.6480625) [order to get the Python libraries;! pip](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=36.668) [install --upgrade, google-cloud-vision.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=40.27222222222223) [Import the io library as well as the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=41.803399999999996) [vision library from the Google Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=45.81460000000003) [namespace. These are the libraries that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=47.685090909090896) [we'll use in our code. The client that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=49.328) [will allow us to invoke the Cloud Vision](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=51.63828571428573) [APIs is the ImageAnnotatorClient, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=54.27333333333333) [that's what we'll instantiate here. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=56.52916666666666) [can specify the image file that you want](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=59.09392857142857) [parse in as an input to this API in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=61.56535714285716) [multiple ways. One way is to use the raw](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=64.33346666666665) [bytes format. I'm going to read the file](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=67.08626666666659) [that I have on my local machine within the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=69.27035294117648) [datasets folder. This is the headphones.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=71.62888235294122) [jpg file. The image and video files that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=73.49453846153845) [I'll be using are freely usable and are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=76.17761538461535) [available as downloadable resources in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=78.93118181818181) [datasets directory. You simply need to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=81.05245454545455) [upload these resources to the datasets](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=83.2708181818182) [folder before you use them. Headphones.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=85.69099999999999) [jpg is an image of a pair of headphones](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=88.277) [taken from Wikipedia. Use the io library](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=91.88599999999997) [to read in the contents of this file in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=94.25585714285717) [byte format, and then instantiate an image](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=96.8812857142858) [object by parsing in these contents. For](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=100.23349999999996) [raw images, you need to specify the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=103.59261538461539) [content as an input argument. We'll first](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=105.6829230769231) [use the Cloud Vision API to perform label](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=107.8356923076923) [detection on our image called client.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=110.47446153846148)[label\_detection, and pass in the image as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=112.90275000000001) [an input. This API will allow us to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=116.25983333333338) [extract information about objects,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=118.9836) [locations, activities, products, animal](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=120.16)[species, a wide variety of labels. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=122.84279999999998) [machine learning model behind this API has](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=127.1179090909091) [been trained on thousands of such](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=128.87427272727274) [categories, which are already predefined.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=130.82924999999997) [You don't need to do anything specific.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=132.833) [The response that we receive from this API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=135.10508333333325) [contains a number of label annotations.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=137.73433333333335) [We'll use a for loop to iterate through](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=139.747) [each label, and print out the description](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=142.14185714285708) [that is located within that label, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=144.24183333333332) [here is the result when you execute this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=146.36866666666663)[code. This image of a pair of headphones](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=148.95446153846154) [has been classified into seven different](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=151.69538461538463) [categories and all of these categories](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=153.96) [make sense; technology, audio, product,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=156.545375) [audio equipment. All of these categories](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=159.86225000000002) [are relevant. This is a great API for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=162.4426666666666) [developers of the Spikey Sales](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=164.95) [organization to use in order to categorize unlabeled product images.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=2&mode=live&start=166.42727272727265)

[Face Detection](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live)

[If you're working with images in the real](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=2.777) [world, it's unlikely that you'll read it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=4.541) [in byte format. They won't be available on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=6.37442857142857) [your local machine. Typically, you'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=8.911571428571424) [point to an image URL somewhere and use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=10.524833333333333) [the image from there, and that's possible](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=13.17216666666667) [as well using the Cloud Vision API.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=15.75358333333333) [Instantiate an image object first, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=18.441) [then we'll point this image object to a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=20.25518181818182) [URI. I'm going to point this image object](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=22.997176470588233) [to a URI from pexels. com. All images from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=26.277647058823522) [Pexels are absolutely free to use, even](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=29.685307692307692) [for commercial purposes. They are great](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=31.895692307692308) [for prototyping. Here is the source for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=33.853076923076934) [this particular image. You can see that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=36.209923076923104) [there are four people here, on the bottom](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=38.05971428571428) [right of the screen, and they all seem](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=39.73914285714284) [extremely happy. They're excited about](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=41.80374999999999)[something; they've achieved something. Get](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=43.92571428571428) [the exact URL for the image and assign it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=46.2505) [to the image. source. image\_uri field.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=48.289000000000016) [This image has a number of people in it.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=50.61276923076924) [It depicts four different people. I'm](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=54.822) [going to use this image to perform face](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=56.41500000000002) [detection. I'm going to parse as an input](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=58.64815384615385) [the image that we instantiated and call](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=61.208769230769256) [client. face-detection. We get the JSON](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=65.22366666666666) [response from the API; we can print out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=67.65838461538462) [the information in this response. Face](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=69.47315384615385) [detection will fill in the face](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=71.92454545454547) [annotations list and we can print out the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=74.594) [individual face annotations that we've](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=77.72709090909092) [detected. I'm going to print out the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=79.643) [entire JSON response for all of the faces](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=82.23649999999995) [that were detected in this image. Let's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=85.35618181818185) [take a look at some of the information](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=87.98207692307693) [contained within this response. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=89.71069230769234) [see that this response is in the JSON](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=91.35620000000002) [format, exactly what we expected. For](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=94.48100000000007) [every face that was detected in the input](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=96.7614)[feature, the bounding\_poly will give you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=99.38059999999997) [the X, Y coordinates of all the vertex of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=101.26915384615383) [the polygon surrounding that face. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=104.12641666666666) [use these vertices to actually draw a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=106.64233333333328) [polygon around each face. You get polygon](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=109.57645454545454) [vertices for individual features that were](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=113.0681818181818) [detected within each face. This is present](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=115.42033333333332) [in the fd\_bounding\_poly. The landmarks](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=118.829) [property for each face will give you the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=121.25590909090909) [important features that were detected,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=123.25954545454545) [such as the left eye and the right eye.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=124.65738461538463) [You can see the X, Y, and Z coordinates](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=127.239) [for each of these. The JSON response for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=130.9850769230769) [each face is huge. All of this information](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=133.70600000000005) [is available for every face detected in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=135.81800000000013) [the image. In addition, you have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=138.18949999999995) [information such as the roll angle, pan](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=140.24560000000002) [angle, and tilt angle of each face. With](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=142.6642857142857) [every face, you have a confidence score,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=145.77057142857132) [which gives you the detection confidence](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=148.30254545454545) [of the face itself, and the landmarking](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=150.07418181818184) [confidence, the confidence the API has in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=152.69563636363634) [the individual features of that face. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=155.733) [API is also capable of detecting emotions](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=158.70449999999997) [in faces and what exactly the person might](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=161.565) [be wearing as an accessory around the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=164.517) [face. You can see things like joy](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=166.6726153846154) [likelihood is very likely in the faces](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=168.757) [that you see here. Sorrow likelihood is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=170.8404545454546) [very unlikely; anger likelihood is very](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=173.45750000000004) [unlikely as well. The people in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=176.3105000000001) [photograph don't seem surprised. That's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=178.862) [right, and you can see that they're also not wearing headwear.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=3&mode=live&start=180.987)

[Optical Character Recognition](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live)

[We'll continue writing our code in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=2.848) [same Datalab notebook, analyze-image.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=5.25090909090909) [We'll use the Cloud Vision APIs to perform](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=6.624) [OCR or Optical Character Recognition.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=10.776) [Instantiate an image object as we've done](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=13.371) [before, and we'll point this image URL to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=15.165916666666666) [an image, which has some text within it.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=17.50045454545454) [We want to detect what exactly this text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=20.307) [is about. You can see that this image is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=22.4046) [not a URL on the internet; instead, it's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=24.934230769230762) [an image that we've stored in our Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=27.502066666666664) [API Cloud Storage bucket. You can see the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=31.32286666666666) [image that we are pointing to at the right](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=33.89441176470588) [side of your screen. This is a sign at a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=35.859588235294105)[parking lot. We'll extract the text that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=38.08942857142858) [is written in this image by performing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=39.67192857142859) [OCR, and this can be done by calling the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=41.51615384615386) [client. document\_text\_detection API, and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=44.392) [we parse in the image that we've just](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=46.368) [instantiated. We get the response from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=50.01466666666668) [this API and the text that we detected](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=52.52066666666669) [will be present in the text\_annotations](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=54.680363636363644) [property of the response. We can set up a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=56.092666666666666) [for loop to iterate through the text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=58.87066666666667) [annotations, and print each annotation out](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=61.34992307692309) [to screen. You'll see that with the text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=63.5842307692308) [annotations, not only will we get the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=65.69746153846155) [recognized text, but additional metadata](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=67.294) [as well. You can see that the API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=70.43542857142855) [automatically detected the source language](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=73.77399999999996) [of this text. The locale is en. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=75.50899999999993) [description property within the text](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=78.66636363636366)[annotation contains the actual text that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=80.78272727272731) [was extracted from this image. You can see](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=82.65449999999998) [that the extraction was done pretty well.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=85.2775) [The text in the original image is on](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=88.018) [different lines and the line breaks have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=90.01430769230771) [been captured as well. Punctuation such as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=92.07300000000001) [the exclamation marks and parentheses have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=94.91150000000003) [also been extracted and recognized](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=97.91472727272725) [correctly. If you scroll down the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=100.5124545454545) [response, you'll see that for every word](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=102.15892307692306) [that was detected in this image, we get a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=103.73661538461535) [bounding polygon vertices, which indicates](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=107.27472727272722) [where exactly that word is located. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=109.43799999999999) [bounding poly here for the word when,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=112.536) [specifies where exactly the term when](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=114.88100000000006) [appears in the image, and here is the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=117.0176153846154) [bounding polygon for the word unattended.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=120.20407692307697) [You can imagine that OCR detection in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=122.73250000000002) [combination with other APIs that GCP has](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=125.844) [to offer can be very powerful. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=127.99138461538463) [extract text from images, and you can have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=130.5403076923077) [them spoken out, using text-to-speech](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=133.3735384615385) [synthesis. Developers in the Spikey Sales](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=135.495) [organization are excited about this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=138.672) [feature because of the possibilities that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=140.31811111111114) [it opens up to make their site and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=142.33663636363633) [application accessible to visually impaired customers.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=4&mode=live&start=145.1431818181817)

[Introducing the Video Intelligence APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live)

[In our big picture of the machine learning](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=2.7) [services that Google has to offer, you can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=4.418153846153847) [see that the Video Intelligence API is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=6.392214285714285) [part of the pre-trained ML APIs. These](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=8.79278571428571) [make powerful machine learning](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=11.702500000000002) [functionality accessible to novice](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=13.712) [programmers with a simple API call. The](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=15.759600000000002) [Cloud Video Intelligence API works with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=19.10090909090909) [videos, just like the Cloud Vision API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=20.720363636363643) [works with images. This makes videos](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=22.990727272727273) [searchable and discoverable by extracting](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=25.37218181818182)[metadata, identifying what exactly is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=27.7875) [within the video, identifying different](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=30.49) [segments of the video, and what it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=32.376666666666665) [represents. It's capable of annotating](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=35.08709090909091) [video content in a very granular fashion,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=37.08890909090909) [and it's capable of detecting scene or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=39.67366666666667) [shot changes as well. Here are some of the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=42.09508333333334) [features that the Video Intelligence API](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=46.01107142857142) [has to offer. It's capable of label](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=47.51835714285712) [detection within videos. It has the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=50.009714285714274) [ability to categorize segments of videos](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=52.61114285714285) [into 20, 000 predefined categories. It's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=55.20742857142855) [able to detect shot or scene changes.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=57.756625) [Let's say you have a video where children](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=60.456) [are playing in the playground, then you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=62.35866666666668)[have another shot where you're showing](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=64.2082) [someone walking down the street. The Video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=66.00460000000004) [Intelligence API can pick up on these](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=69.03785714285718) [changes. This API also has the ability to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=72.22735714285722) [detect explicit or pornographic content.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=75.24908333333337) [So if you're working with user-generated](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=77.082) [videos, you can quickly scan them for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=79.01618181818179) [explicit content before you allow it to be](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=81.43285714285715) [displayed on your site. The Video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=84.65228571428572) [Intelligence API can also be used for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=87.01945454545455) [video transcription, converting videos to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=89.67054545454548)[words. At the time of this recording, this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=91.7432) [API supports videos in these formats; the.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=95.2058) [mov format,. mpeg4,. mp4, and the. avi](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=97.96239999999999) [format. Just like with the Cloud Vision](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=103.09299999999999) [API, the Video Intelligence API has a free](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=104.67284615384615) [tier offering. Up to 1000 minutes of video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=106.8523076923077) [can be processed for free, and beyond](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=109.5427692307693) [that, you have differential pricing based](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=111.79575) [on what you use the Video API for, whether](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=113.61124999999998) [it's for label detection, safe search, or](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=116.65380000000002) [shot detection. The pricing for these APIs](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=119.156) [range from five to 10 cents per minute of video.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=5&mode=live&start=121.67366666666669)

[Videos Analysis](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live)

[In this demo, we'll see how we can analyze](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=2.431) [our videos using the Cloud Video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=4.770999999999998) [Intelligence API. We'll write our code in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=7.3196666666666665) [the analyzing-video Datalab notebook. Once](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=11.509777777777774) [again, you need to have the Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=13.226727272727274) [application credentials point to the JSON](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=15.765818181818187) [file which has your service account keys](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=17.693769230769227) [for these client libraries to work. Use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=19.65323076923076) [pip install to get the Video Intelligence](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=22.239909090909084) [libraries onto your Datalab instance,! pip](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=25.297) [install --upgrade,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=28.642000000000007) [google-cloud-videointelligence. This will](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=29.757) [give you the latest version of the Video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=31.588499999999996) [Intelligence libraries. It's already](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=35.642727272727264) [installed on my machine. I can now set up](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=36.97836363636362) [my import statements from Google Cloud.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=39.65309090909089) [I'm going to import videointelligence.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=41.26) [Instantiate the client that we'll use to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=43.80166666666666) [make our API calls. This is the Video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=46.8495) [Intelligence Service Client in the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=49.55483333333333) [videointelligence namespace. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=52.35233333333335) [specify different kinds of annotations](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=54.075230769230764) [that you want from your video. We'll start](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=55.30830769230767) [off with a simple label detection that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=57.46738461538462) [will allow you to label or categorize what](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=59.84523076923079) [you see in your video. Label detection can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=63.089777777777776) [be used to detect objects within videos](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=66.29875000000001) [such as dogs, airplanes, flowers, cats,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=68.2861666666667) [and so on. In order to have a video with](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=71.45971428571427) [several scenes, I've developed a video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=75.4892307692308)[montage, which we've uploaded to the Cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=77.268) [ML API bucket that we created earlier.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=79.3865) [This is the video\_montage. mp4 file. Let's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=81.505) [take a look at this video montage first so](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=84.17900000000003) [that we know what scenes are available in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=87.69038461538463) [our video. I've sped up this montage a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=90.94207692307697) [little bit so that you'll see things a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=93.10049999999998) [little faster. You can see this view of a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=94.89449999999997) [city. You can see a man on the street](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=96.92806250000002) [looking at a cell phone. You can then see](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=98.966) [a blooming flower. You can also see that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=101.55874999999999) [this flower is a rose. And the last scene](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=103.73800000000003) [in our montage is that of a cute little](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=106.47585714285714) [puppy. We'll now annotate this video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=109.6772857142857) [montage that we just viewed. This is a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=111.88549999999998) [long-running operation we're going to call](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=114.72633333333334) [video\_client. annotate\_video. We pass in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=116.703) [the input\_uri of this video. Remember,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=119.156) [it's pointing to a Cloud Storage bucket, a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=121.93561538461537) [file that's located there. We also](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=124.54853846153841) [explicitly need to specify using the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=126.7619090909091) [features input argument, what kind of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=129.48263636363637)[annotations we want on this video. At this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=131.79999999999995) [point, we're only looking to perform label](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=134.8062) [detection. As you can imagine, video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=138.62889999999996) [annotation can be a pretty heavy-duty](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=140.8433333333333) [operation. This is typically a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=142.84533333333326) [long-running process, which is why it's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=144.89900000000003) [performed asynchronously. How long it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=147.47900000000007) [takes depends on the length of the video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=149.28000000000003) [that you parse in. Our video is pretty](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=151.78933333333345) [short here, it's under a minute, which is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=153.85000000000005) [why we specify a timeout of 3 minutes, 180](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=155.46200000000013)[seconds. Operation. result will invoke the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=159.17775000000006) [API. You can examine the response we get](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=161.731) [from this API in order to see what is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=164.79346153846151) [available here. We're interested in this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=167.3425384615383) [segment\_label\_annotations, and that's what](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=169.81899999999996) [we'll extract from our response. The video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=171.729) [labels contain a lot of fine granular](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=174.68591666666666)[information, and I'll try to extract as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=177.42133333333334) [many details as possible using this for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=179.603) [loop. We'll first print out a description](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=182.25700000000006) [of the entities that were seen in this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=185.26525000000015) [video using video\_label. entity.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=187.88833333333332) [description. Every entity that was](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=189.81624999999997) [identified within this video has been](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=193.06937499999992) [categorized. You can look at the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=195.18409090909088)[categories for individual entities by](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=196.941) [accessing the category entities and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=199.30711111111117) [printing out the description for these.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=201.70771428571427) [You can extract segment-specific](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=204.754)[information for each of these labels. You](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=205.98959999999997) [can get the start time as well as the end](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=208.15339999999998) [time for each segment. This isn't that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=211.25739999999985) [granular, as you'll see from the result.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=213.29459999999997) [Here is the start time for the segment in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=215.151) [seconds, and the end time in seconds as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=217.67759999999998) [well. Let's print out to screen the start](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=219.94646153846153) [time and end time for every segment and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=222.2843076923077) [the confidence that GCP shows within the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=224.87561538461543) [segment. We'll print out the values for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=227.27607692307703) [positions as well as confidence. I'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=230.00699999999998)[print out some additional formatting using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=232.26127272727274) [the equal-to sign as well, so that we can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=233.8469090909091) [view our result nicely. Hit Shift+Enter,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=236.30455555555562) [and here are our labels from the video.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=238.2828) [You can explore and analyze these results,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=241.714) [but you can see from the first glance that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=243.5986153846154) [the descriptions are actually very](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=246.321) [detailed. Here is the first label](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=248.166) [description for a Golden Retriever. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=251.31950000000006) [was the last segment in our video. You can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=254.2932142857143) [see that the label category is that of a](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=255.99614285714287)[dog, and the confidence is 81%. Our video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=258.88345454545464) [was fairly short, and the video start and](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=262.18569230769225) [end times weren't picked up correctly.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=265.16846153846126) [You'll see that for each segment, it](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=267.37300000000005) [indicates the entire video length of 42](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=269.95577777777777) [seconds. With a confidence of 65%, the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=272.83122222222204) [video API correctly identified garden](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=276.2485) [roses. The label category description is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=278.7539166666666) [rose. You can see that the annotations](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=281.4368181818182) [range from the specific to the general.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=284.43775) [There's a label description for a rose as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=287.117) [well, which is more general than garden](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=289.3403846153845) [roses, and the category here is flower.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=291.6826666666667) [Again, a more general category. It picked](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=295.017) [up the label street from the segment where](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=297.2529166666666) [a man was holding a phone on the street,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=299.5442500000001) [and the label category description is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=301.627) [road. In the very first segment, our shot](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=304.92442857142856) [of the city, gave us the label description](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=307.24350000000004) [of an area. I can see that the category is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=309.3305833333333) [city. Given the fine granularity of detail](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=312.5064166666668) [available, you can choose to go with only](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=314.9605000000001) [those categories, which are about a certain confidence threshold.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=6&mode=live&start=319.097)

[Explicit Content Detection](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live)

[We'll continue writing code on the same](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=2.726) [analyzing-video Datalab notebook. This](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=5.3782999999999985) [time we'll see an example of how we can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=6.769) [use the Video Intelligence API for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=9.055) [explicit content detection. This is](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=11.763500000000002) [extremely important when you're working](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=14.414307692307695) [with videos that users have uploaded.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=16.17507692307693) [Specify EXPLICIT\_CONTENT\_DETECTION as an](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=18.288) [enum in your list of features that you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=20.134800000000002) [want to detect. We'll use the same video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=23.569923076923075) [montage as before. It has no explicit](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=26.22961538461537) [content. You can call video\_client.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=29.0442) [annotate\_video, parse in the input\_uri,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=31.3157) [and parse in the new features that you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=33.288666666666664) [want to detect. We'll analyze the video](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=36.325999999999986) [asynchronously by calling operation.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=39.0018) [result and specifying a timeout of 180](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=40.5386) [seconds. Once we receive our response from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=43.79972727272729) [the API, we have the information that we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=47.04583333333333) [need in the explicit\_annotation. frames](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=49.08449999999997) [property. This will give us information](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=51.2365) [for each frame in our video, and it'll](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=55.399) [check whether explicit content is present](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=58.26299999999998) [in any of the frames. For each frame in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=60.42976923076923) [the result, we'll print out the entire](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=63.73623076923077) [contents of the frame. In addition, in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=66.66322222222222) [order to correctly identify a specific](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=69.38275) [frame in our video, we'll calculate the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=71.31425) [time offset of that frame from the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=73.75090909090912) [beginning of the video, and print this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=76.325) [time offset to screen. Once we have this](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=78.97418181818182) [information, let's print out a little bit](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=81.32133333333331) [of formatting so that our results are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=82.77966666666661) [clearly formatted, making it easier for us](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=85.88975000000002) [to view them. Hit Shift+Enter and here are](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=88.40353846153849) [our results from the API. For each frame](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=90.878) [in our video, you get a pornography](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=94.17836363636361)[likelihood score. It shows that it's very](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=96.77709090909093) [unlikely here, and you can get the time](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=99.159) [offset for each of these frames as well.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=101.31776923076929) [Our video montage was an extremely safe](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=103.78136363636362) [one. You can see that for every frame, the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=106.3815454545454) [pornography likelihood is very unlikely.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=110.30069230769227) [You can try with a more explicit video and see what results you get.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=7&mode=live&start=112.518)

[Summary and Further Study](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live)

[And on this note, we come to the end of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=2.549) [this module where we covered the Vision](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=4.706333333333335) [and Video Intelligence APIs. This also](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=6.403666666666666) [brings us to the very end of this course.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=8.259666666666664) [In this module, we studied Google's](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=11.387) [pre-trained machine learning offerings for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=13.655) [vision as well as video. We saw how we](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=15.469) [could perform image recognition as well as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=18.77869230769231) [video annotation. The vision as well as](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=21.39615384615385) [the video APIs can detect faces,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=23.895363636363637) [landmarks, objects, and even scan for](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=25.997)[explicit content. They're extremely](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=30.01700000000001) [powerful and nuanced and we saw how the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=31.89809090909091) [image recognition API can extract emotions](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=34.06245454545456) [from faces as well. The vision APIs can](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=37.16300000000001) [also be used for OCR or Optical Character](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=40.69633333333332) [Recognition from images. Both APIs have](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=43.235) [the ability to classify content against](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=45.633200000000016) [pre-built labels, and in the video API,](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=48.037111111111116) [there are over 20, 000 categories](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=50.855) [available. The video API is also able to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=53.68957142857143) [extract scene changes or segments from](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=56.60446153846155)[videos and annotate them separately. And](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=58.698) [on this note, we come to the very end of](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=61.6032) [this course where we studied the Cloud ML](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=63.88520000000001) [APIs, which exposes the pre-trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=66.67160000000001) [machine learning models that Google](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=69.01360000000003) [experts have built to novice programmers.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=71.4752) [Before I wrap up this course, I'd like to](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=74.465)[remind you that if you have any VM](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=76.53739999999999) [instances, such as the one for Datalab up](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=78.53483333333334) [and running, you will definitely incur](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=80.9981666666667) [charges for those. So it's best if you go](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=83.15228571428574) [ahead and shut down these resources before](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=86.25937500000002) [you move on. As a student of machine](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=88.53831250000005) [learning, if you're interested in using](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=90.94545454545458) [pre-trained models from other cloud](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=92.662) [platforms, I'd highly recommend the](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=94.59866666666666) [Machine Learning and Microsoft Cognitive](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=96.55109999999999) [Services course to you. This will give you](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=98.56659999999997)[an introduction to Azure's pre-trained](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=101.25609090909089) [models and other solutions for common use](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=102.60245454545449) [cases. If you want to be able to perform](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=104.71869230769234) [machine learning yourself, build your own](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=107.58277777777778) [custom models, here are some courses that](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=109.62144444444448) [I can recommend to you on Pluralsight.](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=111.74974999999999) [Understanding Machine Learning with Python](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=113.778) [is a great beginner course. Another option](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=115.668) [is Building Machine Learning Models in](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=118.32540000000002) [Python with scikit-learn, another beginner](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=120.62760000000004) [course that has been tailored for novices](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=122.56133333333332) [in machine learning. And that's it from me](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=125.23027272727273) [here today. Thank you for listening, and I hope you had fun!](https://app.pluralsight.com/player?course=google-machine-learning-apis-designing-implementing-solutions&author=janani-ravi&name=6db4f6c0-bc8d-4d72-8d43-b388430ed13f&clip=8&mode=live&start=127.92045454545456)