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They want to move to a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=132.78399999999996) [pay-as-you-go model as they grow and cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=135.8153846153846) [computing fits perfectly. They are in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=137.896) [process of moving their data to the cloud,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=140.774909090909) [they want all of their data to reside in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=143.4354285714286) [cloud storage buckets, which are first](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=145.720142857143) [elastic, pay-as-you-go global access.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=149.18511111111107) [SpikeySales is a fairly young](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=151.754) [organization, they don't have a trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=153.454) [team of data scientists on board. They](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=155.494) [still want to be able to harness machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=157.43784615384624) [learning for their products, which is why](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=159.7164) [they've turned to Google AutoML to explore](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=1&mode=live&start=161.85979999999992) [what it has to offer. 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The objective of these services is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=18.887615384615387) [to make the common use case easy. 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These](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=55.671888888888894) [pre-trained models allow you to add](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=58.7143) [compelling machine learning features to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=60.73210000000001) [your application, even if you have very](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=62.42681818181818) [little experience with how machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=64.8271818181818) [learning works. 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These are the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=78.89185714285715) [models that you use out of the box. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=80.92328571428574) [have a standard use case you'll simply](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=83.42149999999997) [call into these APIs using your data and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=85.49699999999993) [get prediction results. 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Your model depends](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=94.88563636363634) [heavily on your custom data and your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=97.68709090909084) [specific use case. Let's zoom in and see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=100.45933333333332) [what ML services are available for Google](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=103.17623076923076) [for these two use cases. We have Google](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=105.36615384615382) [Cloud AI, it offers per-trained models or](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=108.67616666666669) [custom models. Pre-trained models are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=111.776) [accessible by a easy-to-use and intuitive](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=114.1735) [APIs, you can just call them directly.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=117.00639999999999) [Custom models can be built using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=120.26) [BigQueryML, AutoML, or Cloud ML Engine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=123.06363636363638) [with TensorFlow. If you want to use the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=125.72766666666666) [pre-trained ML APIs there are a wide](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=128.34899999999993) [variety of standard use cases supported.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=130.91600000000005) [Speech-to-text, text-to-speech APIs,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=133.292) [vision APIs, video APIs, and APIs for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=135.17214285714286) [natural language processing and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=139.016625) [translation. In this course we'll focus on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=140.800125) [how we can build our own custom models](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=142.9517142857143) [without writing any code using Cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=145.226) [AutoML. This allows models to be trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=148.37857142857138) [on our dataset, they're customized to our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=150.90400000000005) [use case, but we won't be writing any](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=153.3031) [code. You can feed in your training data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=156.49590000000003) [to Cloud AutoML and it'll try to find the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=158.80257142857147) [best possible custom model for our use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=161.3643571428573) [case using a combination of transfer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=163.94350000000003) [learning and neural architecture search.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=166.238) [Now how exactly Google accomplishes this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=168.73522222222218) [is something that is a little bit a black](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=171.24857142857144) [box to us, this is Google's proprietary](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=173.5686428571429) [technology. What we do have access to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=175.8270909090909) [though is the model that has been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=178.426) [generated that we can use for predications](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=180.06561538461543) [on our real-world data. Here is the long](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=182.0524) [definition of what exactly Cloud AutoML is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=185.4512307692308) [that I got from Google's website. There's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=187.3293846153847) [a lot going on here. Let's pass this bit](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=189.59650000000005) [by bit and see what exactly AutoML is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=192.66361538461535) [about. It's a suite of machine learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=195.33684615384607) [products. There are a number of curated](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=197.56871428571435) [use cases that AutoML can work with.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=199.96515384615384) [AutoML is a brand new product built on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=202.392) [cutting-edge technology. At the time of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=205.87599999999992)[this recording AutoML was available for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=208.1644545454546) [language translation, natural language](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=210.29063636363645) [processing and sentimental analysis, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=212.6463333333333) [vision. AutoML lies somewhere in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=215.9818888888888) [middle of the spectrum between expert data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=217.9799090909091) [scientists and novice programmers. Like](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=220.03055555555557) [pre-trained ML APIs, AutoML democratizes](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=222.2983333333334) [ML, it makes AI and ML accessible to all.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=224.5313636363636) [When you use AutoML you can train deep](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=228.457) [neural networks on your training data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=231.01833333333332) [without writing any code. You can use the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=232.9177692307692) [UI or simply script using the command](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=235.39284615384602) [line. Unlike the pre-trained models that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=238.05860000000004) [Google makes available via APIs, AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=240.665) [helps builds models that have been trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=243.15118181818187) [for your specific use case. You use your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=245.94216666666665) [own training data and labels. You're not](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=248.8188333333332) [actually using a deep-learning framework](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=251.74850000000006) [such as TensorFlow to build your own](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=253.959) [model, you're simply training the model on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=256.3045833333333) [your data. Under the hood, AutoML uses a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=258.8558333333333) [combination of transfer learning and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=262.3591666666664) [neural architecture search technology.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=264.8177142857143) [Transfer learning allows you to use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=266.928) [pre-trained models and then train them on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=269.33236363636377) [your dataset so you're leveraging the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=272.08866666666665) [power of models that have already been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=274.3466666666666) [trained. Neural architecture search is an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=277.32769999999994) [exciting new field in data science where](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=280.27909999999986) [it uses machine learning algorithms to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=282.9930000000001) [find the best ML model for your use case.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=285.215) [So given a dataset it'll try out a number](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=288.2994285714286) [of different neural networks behind the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=291.3380909090909) [scenes, it'll tune your models using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=293.3257272727273) [something called hyper-parameter tuning,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=295.85977777777765) [and find the best model that fits your dataset.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=2&mode=live&start=297.622)

[Cloud ML APIs vs. AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live)

[Cloud ML APIs from the GCP and AutoML both](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=2.048) [leverage pre-trained models in different](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=5.625909090909092) [ways. Let's see the differences between](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=7.577999999999999) [these two so that you know the right one](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=9.892) [to use for your use case. Cloud ML APIs,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=12.614799999999995) [as well as AutoML, both work only for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=15.663461538461538) [curated common use cases, such as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=18.952692307692296)[sentiment analysis, image classification,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=21.439500000000002) [translation, and so on. But let's say you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=23.104) [want to perform turn prediction for the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=25.57466666666666) [customers of your ecommerce site, neither](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=28.022) [cloud ML APIs nor AutoML can help you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=30.5549) [here. You can't customize the model in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=34.658100000000005) [cloud ML APIs in any way. You have the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=36.90250000000001)[pre-trained model, you simply use it,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=39.56725000000001) [whereas with AutoML you can build your own](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=41.433750000000025) [custom models that have been trained on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=44.00164285714287) [your data. We have new insight into how](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=46.29014285714289) [the models are actually built, when we use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=48.77236363636362) [Cloud ML APIs, the models are there, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=51.310857142857145) [every user of these APIs gets predictions](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=54.017142857142886) [from the same model. AutoML on the other](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=57.0295) [hand uses neural architecture search to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=60.30800000000001) [find the best neural network that will fit](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=62.229500000000016) [your dataset. When you use Cloud ML APIs](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=65.96300000000001) [the same pre-trained model is available to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=68.61123076923076) [all no matter what your dataset is or what](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=70.498) [your use case is, when you use Google's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=73.36553846153846) [Cloud AutoML though, the model varies](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=75.96566666666668) [based on the dataset that you use to train](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=77.9541666666667) [it. When you use Cloud ML APIs there is no](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=80.88999999999996)[use of transfer learning involved.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=84.14437499999998) [Google's data scientists have pre-trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=85.78) [these models for you, you simply use them.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=87.5177777777778) [When you use AutoML though, there is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=90.11299999999999) [transfer learning, your dataset is trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=92.22174999999996) [on top of already-trained models. When you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=95.32649999999998) [use Cloud ML APIs all you need to know is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=98.65775)[how to make REST API calls in order to get](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=101.29649999999998) [predictions. When you're using AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=104.39036363636365) [though you need to have some basic](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=106.089) [understanding of machine learning. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=108.45627272727276) [need to feed in your dataset for training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=110.05135714285714) [and you need to know how to interpret the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=111.9902142857143) [training results so that you can evaluate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=114.58938461538463)[your model. All of this is quite minimal](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=117.01730769230774) [though, so basic concepts of machine learning suffice to use AutoML.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=3&mode=live&start=119.56249999999999)

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Let's try to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=6.406615384615385) [understand some of the data science though](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=8.99492307692308) [that powers AutoML starting off with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=11.593875000000002) [transfer learning. Transfer learning is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=14.079300000000002) [process by which we can reuse a trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=16.707900000000002)[neural network in order to fit it to your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=19.432999999999996) [specific use case. Reusing a trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=22.425666666666665) [neural network is key because it avoids](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=24.542666666666662) [you having to design and build your neural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=26.960250000000002) [network architecture from scratch.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=29.64358333333334) [Transfer learning only works in which the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=31.2867) [use case is common and widely studied and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=34.338) [there are pre-trained models available. If](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=37.54723076923077) [your use case is very specific to you, you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=39.87635714285714) [can't use transfer learning. Transfer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=42.786571428571406) [learning basically works where the problem](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=44.472) [structure stays the same, but the exact](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=46.82400000000002) [details of the problem might be different](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=49.074923076923085) [in your use case and in the pre-trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=51.12861538461541) [model. Use cases such as image](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=54.278000000000006) [recognition, language translation are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=57.032000000000004) [classic examples where transfer learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=58.90880000000001) [is very, very powerful. Let's consider](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=60.96849999999999) [that we have a pre-trained deep learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=63.17357142857142) [neural network available, which translates](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=65.773) [sentences from English to French. Neural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=68.43049999999997) [networks are made up of neurons arranged](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=70.51927272727276) [in layers. Let's say we fed in the cat to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=72.69161538461539) [this neural network, it'll convert it to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=75.72776923076923) [the French equivalent. It's possible to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=79.198125) [use this pre-trained model as the basis to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=81.71192307692306) [build our own custom model that we'll use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=83.83438461538455) [transfer learning to translate Hindi](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=87.07699999999998) [sentences to say, a language like Spanish.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=89.337) [Now pre-trained models are extremely](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=91.96900000000004) [useful here because you may not have a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=93.749) [whole lot of data with Hindi to Spanish](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=95.95699999999997) [translations. You can reuse the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=99.07899999999998)[architecture of the existing model and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=101.60149999999994) [feed in the little detail that you have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=104.08814285714286) [available. The way neural networks work is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=107.25957142857143) [that lower layers of the neural network](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=109.35049999999998) [mostly perform feature extraction, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=111.5233) [these layers of the neural network will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=113.91480000000003) [perform the same job whether you're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=116.98209999999999) [performing English to French translations](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=119.29029999999996) [or Hindi to Spanish translations. This](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=121.63366666666666) [means when you use transfer learning to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=124.43233333333333) [reuse a pre-trained model, you can use the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=126.8846666666667) [lower layers as is without even changing](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=130.00114285714284) [the parameter waves. When you train this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=133.0026428571428) [existing model on your dataset, you'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=135.49699999999996) [freeze the lower layers and only retrain](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=137.413) [the higher layers. We can't avoid this,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=140.25500000000005) [the higher layers are a higher level, they](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=142.84863636363633) [perform more complicated operations. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=145.8914)[higher layers in a neural network are more](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=148.70241666666666) [specific to the problem that you're trying](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=150.85775000000004) [to solve, which is why these might need to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=152.74966666666666) [be retrained in order to fit your dataset.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=155.35144444444444) [Transfer learning is a process by which we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=158.827) [can ride on the shoulders of giants. There](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=161.55073333333326) [are data scientists who have optimized and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=164.25709090909092) [tweaked the original pre-trained model, we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=166.51872727272738) [can reuse the architecture and have that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=168.6495454545455) [model fit our dataset by only retraining](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=171.3598181818183) [the higher layers. The architecture of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=175.07833333333338) [model, the choice of initialization, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=178.06711111111107) [activation functions in the model, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=180.02863636363637) [number and density of layers in the model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=181.87445454545454) [can all be used as is. Transfer learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=184.70260000000002) [allows us to work with very powerful](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=187.8388) [models, even if we don't have very much](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=190.4281) [training data that is specific to our use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=192.92862499999995) [case. For example, there are lots of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=195.3636249999999) [sentences available for English to French](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=197.86127272727265) [translated pairs, lots of training data.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=200.201) [But for Hindi to Spanish there might be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=203.273) [little or no training data, which is why](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=205.28100000000003) [transfer learning works so well. Transfer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=207.69550000000004) [learning is a process that AutoML uses](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=209.9585) [behind the scenes in order to build a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=212.272) [powerful model that fits on your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=214.96499999999997) [dataset, it's using pre-trained models](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=217.36424999999994) [under the hood, but it's customizing them](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=219.163) [with a little bit of training to be more specific to your use case.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=4&mode=live&start=222.347)

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[In addition to transfer learning AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=1.863) [behind the scenes also uses neural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=3.9460909090909095) [architecture search in order to find the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=6.056909090909091) [best possible custom model for your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=8.681272727272725) [dataset. Think of neural architecture](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=10.946000000000002) [search as using an ML algorithm to perform](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=12.846000000000005) [a search for the best possible model. Here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=15.897249999999996) [is the definition, let's pass this bit by](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=18.86023076923077) [bit and see exactly what's going on.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=21.158076923076937) [Neural architecture search uses a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=23.668727272727267) [recurring neural network. 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The agent then takes](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=130.02261538461534)[actions based on an algorithm that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=132.60099999999994) [determines the policy that the agent](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=134.82549999999986) [should follow. 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These range from services where you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=188.31615384615387) [can build and train your own custom model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=190.24169230769243) [or simply call APIs to get predictions.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=193.24672727272733) [Cloud AutoML is a brand-new offering from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=196.58) [the GCP, it's a service that automates](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=199.11399999999998) [custom model building and you can build](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=201.69718181818183) [your own custom models without knowing any](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=204.57545454545465) [deep neural networks, just by](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=207.37820000000002)[understanding basic machine learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=90e3ec04-500d-4b68-9b64-e4612d0455e1&clip=5&mode=live&start=209.33970000000005) [concepts. 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Both elements of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=81.31266666666671) [the pairs should be available, data should](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=83.58007692307692) [be in the TSV or the TMX format because](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=85.62892307692306) [this is what AutoML understands. We'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=89.17809090909094) [talk about these formats in a little more](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=91.68953333333333) [detail in just a little bit. Once datasets](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=93.9738) [have been created and your data has been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=96.29950000000001) [imported to AutoML, you'll then run a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=98.74950000000005) [training with just a few clicks of the UI.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=100.96628571428568)[AutoML will use transfer learning and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=103.854) [neural architecture search to generate a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=106.08779999999997) [model for you. AutoML will also generate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=108.62027272727272) [an evaluation score for your model. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=112.27172727272725) [can compare your custom model to Google's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=115.19583333333331) [NMT and see which one performs better.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=117.829) [NMT, which stands for neural machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=120.40616666666666)[translation model is what the Translate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=122.76581818181818) [Cloud ML API uses. AutoML will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=125.87872727272723) [automatically deploy your custom model to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=128.559) [a unique endpoint, you can then hit this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=130.37400000000005) [endpoint either using programmatic client](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=133.77559999999994) [libraries or the REST API to get](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=136.05544444444442) [predictions. Your model will be live in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=138.96355555555544) [production. The training data that you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=141.97400000000002) [feed into AutoML for translation requires](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=144.473) [matching pairs, you require the original](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=146.924) [sentence in the source language, these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=149.33900000000003)[form the features of your training data,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=151.75588888888888) [and you'll require the translated sentence](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=154.58) [in the target language. These form the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=156.737) [labels of your training data. Each pair](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=159.29587500000002) [that is made of a sentence in the source](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=161.69614285714283) [language and the equivalent translation in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=164.09078571428563) [target language is treated as one training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=166.34130000000005)[instance that is fed into your model.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=169.73) [AutoML accepts training data in one of two](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=172.9109166666667) [formats, the sentence pairs should either](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=176.13764285714282) [be in the form of tab-separated values in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=178.04692857142848) [a. tsv file, or in the translation memory](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=181.02836363636362) [exchange format that is a. tmx file. If](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=184.736) [your data is located across multiple files](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=188.268923076923) [that are in the TSV or TMX format you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=191.10326666666666) [batch all of the data together into a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=194.23459999999992) [single CSV file. This CSV file will simply](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=197.28938461538468) [point to the right TSV and TMX files,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=200.674)[which contain the sentence pairs. TSV](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=204.36999999999992) [stands for tab-separated values and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=207.12927272727273) [sentence pairs which are in TSV files can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=209.37563636363637) [be in one of two formats. You can have the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=212.4877142857143) [two-column format where the original and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=215.3734285714286) [the translated sentence is separated by a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=217.87799999999996) [single tab represented by \t. Other TSV](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=220.97957142857143) [files can be in a three-column for mat.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=224.07907142857147) [Here the very first column is the source](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=227.64299999999997) [identifier. So you have the identifier for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=231.24299999999988) [the source language, then a tab, then the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=233.80750000000003) [actual sentence in the source language,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=236.44316666666666) [and then a tab, and then the translated](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=238.00666666666663) [sentence. AutoML translation also accepts](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=241.16366666666661) [training data in the TMX format. TMX](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=243.807) [stands for Translation Memory eXchange.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=247.49658333333335) [This is standard XML format for machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=250.132) [translation. TMX files are made up of tu](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=253.64775000000003)[elements which contain pairs of sentences,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=256.58600000000007) [and each tu element contains nested tuv](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=258.8867272727273) [elements with the target sentence, as well](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=262.8118181818181) [as the source sentence. If the dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=266.17999999999995) [that you're going to feed into the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=268.7256363636363) [translation algorithm is made up of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=270.7314545454543) [different files you'll create a single CSV](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=272.76758333333333) [file that refers to individual](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=275.217) [tab-separated files, or TMX files. Within](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=278.17750000000007) [the CSV file you'll specific whether this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=281.4733636363636) [dataset should be used as training data,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=283.8209090909091) [validation data, test data, or unassigned.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=287.08179999999993) [When you specify unassigned AutoML will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=290.464) [automatically split the dataset into](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=293.1746666666665) [training, test, and validation data. All](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=295.50457142857135)[AutoML models, whether it's for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=298.40171428571426) [translation, natural language processing,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=300.7052857142857) [or vision use 80% of the data for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=302.43775000000005) [training. This is the data that you use to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=305.82908333333353)[tweak your model parameters. Ten percent](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=309.72233333333344) [of the data will be used as your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=312.12166666666667) [validation set. Validation data is what](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=314.7803333333334) [you use for hyper-parameter tuning for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=317.09939999999995) [tweaking the design of the neural network](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=319.581) [of your model. AutoML will finally choose](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=321.82030000000015) [that model that performs best on your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=324.1745454545455) [validation data, and finally, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=326.615) [remaining 10% of the data will be used for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=328.77333333333337) [evaluation. This is the best dataset, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=332.6381666666667) [this dataset will give you a measure of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=335.58925) [how well your model performs. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=338.824) [evaluation metric or score used for the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=341.1792727272727) [translation API is the BLEU score. BLEU is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=343.87618181818164) [an acronym that stands for bilingual](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=347.5808461538461) [evaluation understudy. BLEU scores for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=350.63946153846143) [translation models typically range from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=353.0376666666666) [0-1, and in AutoML these are expressed in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=355.3354444444443) [percentage terms. So the BLEU score is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=359.0476666666668) [between 0 and 100. Here is a table that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=361.6493333333334) [will allow you to assess what a BLEU score](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=364.65953333333357) [means. A BLEU score of less than 10 means](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=367.6304444444444) [their translation is almost useless, 10-20](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=369.9499999999998) [it's not great, it's hard to get the gist](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=371.67299999999994) [of the translation, about 20 is okay, but](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=374.9489999999997) [may contain grammatical errors, and about](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=378.5809999999999) [30 is a good model. Very high-quality](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=381.3011538461538) [models tend to have BLEU scores about 40.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=384.0456923076921) [You should know though that even human](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=387.1510909090909) [translators may not achieve BLEU scores](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=389.841) [close to 100. And now is a good time to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=392.37699999999995) [tell you that using AutoML can be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=396.09173333333337) [expensive. The pricing for AutoML is based](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=398.53846666666675) [on the training and prediction usage of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=400.8194999999999) [your model; you get 2 hours of training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=403.1293636363636) [completely free. This is for the beta](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=406.1562727272728)[period within Google. Beyond 2 hours,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=409.009875) [training costs $76 an hour for the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=411.65950000000004) [translation model. You'll see in our demo](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=414.9063333333335) [here that training ran for 6 hours, so AutoML is expensive, use it carefully.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=1&mode=live&start=417.48566666666665)

[Enabling APIs for AutoML Translation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live)

[It's now time for us to get hands-on.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=2.453) [We'll use the AutoML web console to train](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=4.650538461538462) [a language translation model. We'll feed](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=7.428428571428572) [in a dataset that contains German to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=10.039666666666667) [English sentence pairs and run training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=12.625000000000002) [and prediction with this data. Here are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=14.915374999999997) [the basic steps that we'll follow in order](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=17.4505) [to train our model. We'll first access the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=19.670428571428573) [data that we want to use, this data has to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=21.776142857142872) [be in the TMX or TSV format. We'll then](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=25.29223076923077) [use the AutoML web console to create an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=28.970499999999998) [empty dataset. This empty dataset is where](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=32.18849999999999) [we'll feed in training data to AutoML,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=35.06633333333335) [we'll then import our data into this empty](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=37.969) [dataset. We can either feed in the TMX](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=41.08633333333331) [file directly or create a CSV file that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=43.57366666666667) [references our TMX file. We won't](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=45.971) [explicitly specify data for training,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=48.85879999999998) [validation, and test, AutoML will take](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=51.143499999999996) [care of splitting the data into training,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=53.30049999999998) [validation, and test sets. We'll then](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=56.47100000000001) [invoke AutoML to start the training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=59.20807692307693) [process on our custom model. This is as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=61.143307692307715) [simple as clicking a button on the web](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=63.725) [console. AutoML will take care of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=66.30900000000005) [deploying our trained model to an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=68.32991666666669) [endpoint, we can then predict with this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=70.36741666666671) [model using either the UI or REST API or a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=72.618) [Python client. We start our demo off by](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=76.2285) [logging into a Google Cloud Platform](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=79.63423076923073)[account. You need to login into the GCP](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=81.97746153846145) [using either a Gmail account or a GSuite](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=84.17649999999995) [account that's associated with your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=86.49514285714285) [organization. If you've already created a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=89.04585714285712) [GCP project, this is the main project](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=91.63869230769232) [dashboard. We're currently in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=94.55446153846158) [spikey-automl project, engineers in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=96.51766666666668) [SpikeySales organization are using this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=98.451) [project to test out AutoML. If you don't](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=100.87650000000001) [have a project already set up make sure](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=104.1242142857143) [you create one and enable billing on this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=2&mode=live&start=106.31678571428576) [project. 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You can see from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=73.1953) [this list here that AutoML supports many](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=75.4918)[languages. Of these languages German is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=78.89409999999998) [one, we want to translate from German to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=82.02429999999995) [English. If you scroll down you'll find](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=85.00474999999996) [different in which you can specify your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=87.10560000000001) [training data. I'm going to SELECT FILES](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=89.14680000000003) [from my local machine. Here is my TMX](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=91.36944444444447) [file, I'm going to go ahead and upload it.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=93.85823076923079) [You can also have your training data live](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=96.507) [in cloud storage buckets.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=99.48700000000002) [Spikey-automl-vcm is the name of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=100.977) [staging bucket that has been automatically](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=103.41409090909093)[created when you enabled the translation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=105.9471111111111) [AutoML API. Our current project is named](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=108.95977777777773) [spikey-automl, that is the prefix of this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=111.84036363636365) [bucket, -vcm is the suffix that AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=114.65145454545454) [added for translation. Go ahead and click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=118.56763636363634) [on the CREATE DATASET button, a dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=121.40692307692309) [will be created on AutoML, and your data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=123.43853846153851)[will be imported into that dataset. Wait](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=126.29300000000003) [for a couple of minutes until all of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=128.88115384615386) [translation are imported. Once your data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=131.70853846153858) [has been imported you can see all of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=133.39114285714288) [sentences that makes up your training,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=135.6115714285715) [test, and validation data. You can see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=138.17600000000002) [from the \_\_\_ being that about 62, 000](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=141.47418750000003) [pairs of sentences were imported. There's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=144.74668750000006) [a warning up top about the translations](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=147.08263636363637) [that we imported, click on VIEW DETAILS,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=149.11709090909093) [and you'll see that AutoML found some](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=151.37118181818184) [duplicates in our data. About 5, 000 of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=153.79) [the original translation pairs were](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=157.01466666666673) [duplicates and these will skip when](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=159.00181818181818) [parsing our TMX file. This is totally](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=161.2507272727272) [fine, you can go ahead and dismiss this warning.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=3&mode=live&start=165.75)

[Training and Prediction](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live)

[Once we have our data all imported we're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=1.706) [now ready to start the training process,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=3.4358461538461538) [click on the TRAIN tab here in AutoML and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=5.133461538461538) [this will take you to a page that will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=7.907538461538458) [give you a little bit of information about](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=10.142499999999998) [your data. This page clearly says that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=12.040692307692307) [your model is ready to be trained, if](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=13.998538461538462) [there were warnings of other issues that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=16.185307692307692) [will crop up on this page. You can see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=18.024692307692302) [that AutoML has automatically split the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=20.784500000000005) [data for us. We have 80% of the data used](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=22.756) [for training, 10% for validation, and 10%](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=26.480166666666662) [for test. I'm ready to start the training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=29.33076923076923) [process at this point in time, click on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=32.7) [the START TRAINING button. This will pop](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=35.287333333333336) [up a dialog, which will give you a brief](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=37.302499999999995) [summary of your data and the base model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=39.46699999999997) [that you're going to use. You can see at](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=41.956363636363626) [the bottom here that training this model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=44.6697142857143) [will take at least 3 hours. AutoML is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=46.48921428571432) [serverless, it'll automatically](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=49.747000000000014) [instantiate the servers for training, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=51.23380000000002) [then run the training process. Training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=53.93611111111111) [can get expensive though, so make sure you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=56.32591666666667) [click on the pricing guide to know how](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=58.33325000000002) [much this will cost you. AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=60.85000000000001) [translation works with Google NMT as its](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=63.0514) [base model, and then it runs training on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=66.11319999999998) [top of this using your dataset. I'm ready](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=69.04449999999997) [to start training now; click on the START](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=71.71433333333334) [TRAINING button. For the dataset that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=74.16766666666672) [we're using for this demo, which has](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=76.07299999999998) [around 66, 000 translation pairs, training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=78.33399999999993) [ran for around 6 hours. And remember I'd](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=81.40449999999997) [mentioned earlier that AutoML uses a cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=85.2990909090909) [storage bucket for staging this bucket is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=87.97563636363635) [created automatically when you enable the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=90.42920000000004) [API. Go to the Navigation menu, click on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=92.65415384615386) [cloud storage and Browser, and here is the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=96.0307692307693) [bucket that AutoML created. The training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=99.77200000000002) [process continues to run in the background](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=102.23033333333332) [here on the GCP, you can monitor it using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=103.90449999999996) [the AutoML translation page if you want](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=106.62830769230773) [to, come back after 5 hours or so, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=108.969) [you'll find that the training of your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=111.47549999999994) [model is now complete. Click on the TRAIN](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=113.48613333333333) [tab and you can see the score for your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=115.95866666666666)[custom model. You can see when the model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=118.60584615384617) [was created, how many sentences it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=120.80953846153851) [analyzed, and you can see its BLEU score.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=123.14692307692304) [The BLEU score here is between 20 and 30,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=126.446) [which means the translations are decent,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=128.8933076923077) [you can understand them, but they aren't](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=130.7622) [great. Let's try and use this model for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=133.49640000000005)[prediction, for actual translation, click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=136.1766363636364) [on the TEST AND USE button and that will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=137.8084) [take you to another page. We'll first test](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=140.71899999999994) [out model out using the UI, I'm going to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=143.083) [type in some German text here, and I'm](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=145.32399999999996) [going to translate this German text to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=147.73808333333332) [English by clicking on the TRANSLATE](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=150.072) [button. And you can see on the right-hand](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=152.8662857142857) [side we get two English translations. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=155.48207692307696) [first English translation is from the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=157.61358333333334) [custom model that we just built using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=159.34508333333343)[AutoML, the second English translation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=161.8422) [uses Google's NMT model, this is what you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=164.47769999999994) [get from the Cloud Translation API. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=167.84172727272727) [can see from this result here that the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=170.24558333333334) [translations are pretty close; our custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=172.36225000000013) [model performs almost as well as Google's NMT model.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=4&mode=live&start=176.156)

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Let's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=12.912999999999998) [see an example of how we can use the REST](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=15.791142857142859)[API to perform translations using our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=18.072571428571422) [custom model in AutoML. In order to use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=20.304142857142857) [the REST API, or even to use Python](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=23.52238461538462) [libraries, you need to set up a service](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=25.83315384615386) [account on the GCP. A service account is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=28.201000000000004) [one that is used for service-to-service](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=31.076272727272727) [authentication. It's not associated with a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=33.60718181818182) [specific user identity. The payload to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=36.58087499999999) [AutoML REST API can be specified in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=39.45015384615386) [JSON format, here is what the payload](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=42.12646153846158) [looks like, you specify the textSnippet](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=44.12899999999999)[and the content you want translated. Here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=46.123) [is the curl command that we can use in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=49.968125) [order to make a REST API call to our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=51.95825000000001) [custom translation model. We pass in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=54.33684615384616) [payload in the from of a JSON file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=56.791153846153875) [request. json. If you're writing an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=59.817615384615394) [application in Python and you want to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=62.18715384615386) [programmatically access your AutoML custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=64.947) [model, that is possible as well. Here is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=66.917) [how you use Python libraries to invoke](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=69.44315384615388) [your custom model to get the translation.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=71.89577777777778) [But before we do all of this we need to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=74.954) [get service account credentials. Go to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=77.89328571428565) [Navigation menu and go to the IAM and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=80.11750000000002) [admin option here, and go to Service](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=82.91350000000007) [accounts under here, this is where you'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=85.14400000000002) [create a new service account by clicking](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=87.21250000000005) [on the CREATE SERVICE ACCOUNT link on top.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=89.8192857142857) [I'm going to call this service account](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=92.901) [spikey-service, it's automatically](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=95.57937500000003) [associated with the service account ID.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=96.80525) [I'm going to now select a project, a role](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=99.335)[associated with this service account. This](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=102.35578571428572) [role is what determines the permissions](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=104.35527272727273) [that the service account has in order to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=106.2829090909091) [access resources and APIs within the GCP.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=109.30036363636363) [You're experimenting with AutoML here, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=112.332) [role that I choose is Project Owner. Go](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=114.55061538461541) [ahead, click on Project Owner, and then](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=117.45886666666667)[click on Furnish a new private key. This](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=119.69793333333335) [will allow you to get a key either in JSON](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=122.24757142857143) [or P12 format. We'll stick with the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=125.35328571428565) [default JSON format that is recommended,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=127.80980000000002) [click on the SAVE button, and this will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=130.097) [download a JSON file to your local](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=132.9424999999999) [machine. This JSON file will contain the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=135.43231249999982) [service account credentials that is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=137.88309090909092) [required to authenticate all calls that we make to AutoML APIs.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=5&mode=live&start=139.629)

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[We'll run the curl utility to make REST](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=2.301) [API calls to our model using the Cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=4.892428571428573) [Shell terminal window. Cloud Shell can be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=7.676363636363636) [activated using this button at the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=10.617636363636366) [top-right of your screen. Cloud Shell](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=12.873) [gives you a terminal window within your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=14.974) [browser. Cloud Shell is backed by an FML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=17.375) [VM on the GCP, and there is one of these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=19.662250000000007) [VMs associated with every project. Using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=22.5978) [the Cloud Shell terminal window on the GCP](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=25.212600000000002) [is great because it comes preinstalled](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=28.297727272727265)[with all of the tools that you need to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=30.431) [work with GCP services. The G-Cloud SDK is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=33.40861538461538) [already installed, as is gsutil to work](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=36.127333333333326) [with cloud storage buckets. Activate your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=38.569166666666646) [Cloud Shell and here is the JSON payload](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=41.290916666666675) [that we'll use to pass to our custom model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=45.00492857142857) [for prediction for translation. 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Before you make the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=53.473500000000016) [REST API call though, you need to point an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=55.780769230769224) [environment variable to your service](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=58.442) [account credentials. 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In order to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=68.834) [activate the service account credentials](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=72.17872727272726) [for this particular session, you simply](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=74.08855555555557)[call gcloud auth activate-service-account,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=76.05522222222227) [and point to your key-file that is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=77.82) [currently in your home directory. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=81.0985) [your service account credentials have been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=83.5255) [activated, you're now ready to make a curl](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=85.75736363636364) [request to the REST API. This is what the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=88.473) [request looks like. This request is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=92.25224999999999) [authorized using the access token from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=94.8644) [G-Cloud, and this is the REST endpoint.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=97.56920000000001) [The URL for every custom model that you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=100.50815384615383) [train will be unique. You can see the ID](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=103.71600000000001) [of your model here within the URL. Each](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=106.46100000000007) [custom model that you train in AutoML has](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=108.89053846153844) [its own unique ID. The ID associated with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=111.30961538461533) [your model will be different from the ID](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=114.40266666666669) [that you see here on screen. You can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=117.15520000000001) [simply copy over the curl command from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=119.17973333333336) [your AutoML translation console. And here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=121.99971428571426) [are the API results, the English](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=125.34557142857142) [translation for our text in German. We'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=128.15228571428568) [now run some Python code that will invoke](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=131.23791666666668) [the Python client libraries to call into](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=133.46925000000007) [our custom model. 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Once this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=145.6931538461539) [package has been installed successfully we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=148.81149999999994) [can create a new Python file; we'll call](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=151.50041666666667)[this predict. py. And we'll copy over the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=154.46375000000003) [Python code from our AutoML translation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=157.5908333333333) [page. Here is the Python code for predict.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=160.0098333333333) [py, simply copy over the code and paste it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=162.468) [into your Cloud Shell editor. Before we do](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=165.25949999999997) [that though, let's take a look at what](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=168.2054999999999) [exactly what this prediction code does. It](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=170.65150000000006)[imports the AutoML libraries, and then has](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=172.8383333333333) [a method called get\_prediction. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=176.17966666666655) [get\_prediction function takes in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=178.40681818181818) [content that needs to be translated, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=179.9959090909091) [project ID, as well as the model ID that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=182.28633333333332) [has to be invoked. It then instantiates a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=185.4423333333332) [PredictionServiceClient that is available](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=188.8067777777778) [in automl\_v1beta1. Set up the URL and the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=190.7685555555556) [payload in order to hit the model endpoint](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=194.417076923077) [and we call prediction\_client. predict,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=198.0182) [pass in the model endpoint, the payload,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=200.25370000000004) [and additional parameters, and that's it,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=203.50740000000005) [we return the response from our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=206.376) [prediction. This Python file accesses](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=209.0545714285715) [arguments from the command line to get the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=210.7313333333333) [content to be translated, the project ID,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=213.192) [as well as the model ID. We'll copy this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=215.86384615384614) [over to the predict. py file that we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=219.05678571428575) [created in our Cloud Shell, click Ctrl+X](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=221.46421428571443) [to save this file, and let's open up](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=223.80946153846153) [another text file, which will contain our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=226.69438461538462) [source sentence in German. Before we run](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=229.76400000000007) [predict. py we need to set up an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=232.54315384615384) [environment variable that points to our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=235.13823076923077) [service account credentials. It's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=237.78357142857143) [important to set the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=239.75385714285716)[GOOGLE\_APPLICATION\_CREDENTIALS environment](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=241.64528571428576) [variable if you want to access AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=242.591) [APIs, as well as for Cloud ML APIs. We're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=245.6602666666667) [now ready to execute our Python program](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=249.67700000000002) [for prediction. For this we need the ID of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=253.24000000000012) [the model that we're planning to invoke,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=255.7055000000001) [go to the AutoML translation page for you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=257.153) [model, click on Models on left navigation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=259.8914615384617) [pane, this will show you all the models](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=262.1280769230769) [that you have available, we just have the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=264.2283846153844) [one custom model for translation here. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=266.8469090909091) [model ID is what you see here in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=269.27346666666665) [second column, the one that starts with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=271.33866666666665) [TRL. Python is already installed on our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=273.44866666666667)[Cloud Shell VM, we called python on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=276.81800000000004) [predict. py, pass in the textfile. txt](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=279.7004615384615) [that we created just now with our German](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=282.2177692307692) [sentence. Specify the ID of our current](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=285.5761428571428) [project, which is just spikey-automl and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=288.5275000000001) [specify the model ID. This is the ID that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=291.039) [you get from our AutoML translation page](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=293.91000000000014) [for our custom model. Hit Enter, and here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=296.30449999999996) [is the translated response from the server.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=6&mode=live&start=299.5024999999998)

[Cleaning up Models, Datasets, and Buckets](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live)

[In the next demo we'll see how we can use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=0) [the command line to build and train a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=4.1575) [custom model for translation, but before](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=6.177500000000003) [that let's clean up after ourselves. Go to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=8.014333333333333) [the Models page, here is where our custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=10.817133333333333) [model for translation is listed. If you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=13.393666666666663) [scroll over to the right you can see that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=15.552470588235293) [this model has been successfully trained.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=18.020588235294127) [Click on the three-dot menu and you'll see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=19.666) [an option to delete this model. Click on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=21.849999999999998) [Delete model, go ahead and confirm](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=24.507777777777775) [deletion. We'll now clean up the dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=27.567111111111103) [that we used to train this model as well.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=29.570999999999994) [Click on the Datasets link on the left](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=31.812) [navigation pane, this will take you to a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=34.5192) [page that lists all of your datasets.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=36.69184615384617) [Click on the three-dot menu and choose](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=38.437) [Delete Dataset. Confirm deletion, your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=41.35444444444447) [dataset will be removed as well. There is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=43.506666666666675) [one last bit of cleanup that needs to be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=46.6395) [done. Go to the Cloud Platform dashboard](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=48.869249999999965) [and click on the hamburger icon to get all](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=50.915500000000016) [of the services. Let's go to Storage and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=53.67135294117647) [go to our cloud storage buckets. When we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=56.22429411764707) [enabled AutoML for translation the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=59.1452) [spikey-automl. vcm bucket was created,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=61.66070000000002) [this is the bucket that we're going to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=63.724000000000004) [delete. Click on the DELETE link on top](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=65.94000000000001) [and get rid of this bucket. Now that we've](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=68.7601538461538)[cleaned up after ourselves, this gives us](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=71.86676923076924) [a fresh start when we train the same](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=74.0292307692308) [custom translation model using the command line.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=7&mode=live&start=79.956)

[Using the Command Line to Train a Model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live)

[In this demo let's see how we can use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=1.7) [AutoML to train our model from the command](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=3.9362000000000013) [line. We'll build the same custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=6.072636363636363) [translation model that we did earlier. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=8.009545454545453) [start off at the Cloud Shell prompt. Run](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=11.465214285714286) [ls -n, you'll see that within our home](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=13.890928571428578) [directory we have a director named](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=16.5482) [translation. this is going to be the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=18.83060000000001) [current working directly that we'll use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=20.855000000000004) [when we train our model from the command](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=22.49900000000001) [line. Move into the translation directory](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=25.118583333333333) [and when you run the ls command here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=27.087846153846154) [you'll see that our service account](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=29.438615384615385) [credentials, as well as predict. py is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=31.539846153846153) [present within this directory. Our first](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=34.78030769230769)[step will be to access the data that we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=37.116571428571426) [need for training. We get the data using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=39.29714285714285) [the curl command, and we download the TMX](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=41.75542857142857) [file onto our Cloud Shell machine. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=44.52571428571427) [gzipped file containing German/English](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=48.03533333333333) [translation pairs is now available in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=50.032555555555554) [translation directory of our Cloud Shell.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=52.94144444444445) [Let's go ahead and unzip this file first,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=55.55033333333335) [we'll use gunzip, that comes preinstalled](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=58.9547) [on Cloud Shell, and we get our TMX file,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=60.956900000000005) [this is our training data. Let's set a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=64.45127272727271)[bunch of environment variables that we'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=67.36438461538462) [use when we run our shell commands. We'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=69.03515384615388) [export the current project ID, that is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=72.0916666666667) [spikey-automl. The current region we want](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=75.49133333333342) [to work in within GCP is us-central1, set](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=78.18783333333333) [that to the REGION\_NAME environment](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=81.79571428571428) [variable. A region on the GCP refers to a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=84.35928571428569)[particular geographical area, and there](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=87.68800000000003) [are multiple zones within a single region.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=89.50044444444444) [Set the GOOGLE\_APPLICATION\_CREDENTIALS](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=92.148) [environment variable, point it to our JSON](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=94.4946) [file, which contains our service account](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=97.93650000000001) [credentials. This environment variable has](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=100.18950000000002) [to be set in order to get us programmatic](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=101.76766666666668) [access to our cloud APIs. We'll use the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=104.66954545454546) [gsutil command line utility from Cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=108.6419090909091) [Shell in order to create a regional bucket](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=111.07700000000001) [that the AutoML translation API will use.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=113.961) [Gsutil is Google's command line utility,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=117.62454545454548) [which helps us work with cloud storage](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=120.6272) [buckets. Gsutil mb creates a new bucket.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=123.8094) [This is a regional bucket and the name of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=126.1946153846154) [the bucket is spikey-automl-vcm. Our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=129.77772727272725) [PROJECT\_ID is the suffix that a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=133.10454545454536) [spikey-automl and -vcm is the suffix that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=136.83054545454544) [the translation AutoML API expects. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=140.55645454545453) [the bucket has been created we're ready to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=143.1266666666667) [move our training data to this cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=146.138) [storage bucket. We do this via the gsutil](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=148.87422222222227) [cp command. The training data in the form](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=151.73499999999996) [of the TMX file is now available in this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=154.507) [bucket. This time around, we'll train our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=157.8433) [custom model by feeding in a CSV file.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=159.97328571428562) [This CSV file will point to our training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=162.319) [data that lives in our cloud storage](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=165.5545) [bucket. This CSV file can be used to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=168.3855625) [reference other files that hold the data,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=170.9715) [either TMX files of TSV files. The use of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=173.153) [the unassigned keyword here indicates to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=177.4536153846153) [AutoML to split this data into training,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=180.2774) [validation, and test data. You can also](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=183.47079999999997) [split up the data yourself and specify](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=186.79638461538465) [separate training data, validation data,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=190.144) [and test data using the train validation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=191.99854545454548) [and test keywords here. We have our CSV](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=194.6366923076923) [file all set up, hit Ctrl+X to save the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=197.93823076923078) [file. We can use the gsutil cp command to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=201.2603333333334) [copy the CSV file over to our cloud storage bucket.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=8&mode=live&start=204.2687333333335)

[Creating Dataset and Importing Data Using the Command Line](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live)

[When we use the command line to train our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=3.161) [AutoML custom model we invoke Python](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=5.840923076923079) [libraries that explicitly creates the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=7.9648) [dataset and runs training for us. All of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=10.296800000000001) [these Python libraries are available from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=13.32933333333333) [the GCP in publicly-accessible buckets.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=15.289333333333328) [I'm using the curl command line utility](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=18.0056) [here in order to download this Python code](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=21.995571428571427) [onto my Cloud Shell machine. This file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=25.240142857142846) [here, automl\_translation\_dataset. py](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=28.368000000000002) [contains the Python code that allows us to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=30.018000000000004) [create datasets, import data, we can run](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=33.698615384615394) [this from the command line. Once you've](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=36.28969230769233) [downloaded this Python program let's take](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=39.180500000000016) [a look at the code within this file,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=41.59466666666667) [automl\_translation\_dataset. py. Here is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=43.704) [the Python function that is called when we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=46.6488888888889) [want to create a new dataset. It takes as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=51.18733333333334)[import arguments the project ID, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=54.1149) [region, the name of the dataset, and the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=56.540699999999994) [source and target languages. Datasets in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=59.812454545454564) [AutoML can be created by instantiating the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=62.4086) [AutoMLClient from the AutoML package. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=65.76020000000003) [specify the source\_language\_code, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=68.60462499999998) [target\_language\_code, and call the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=70.74542857142858)[create\_dataset function. If you scroll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=73.63114285714288) [down further in this file, you'll find the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=75.81199999999998) [function that is invoked in order to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=77.77999999999994) [import data into this dataset. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=80.18249999999998)[import\_data function takes in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=82.45100000000001) [project\_id, the region, the dataset\_id,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=84.24100000000003) [and the path to import from. Importing](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=86.36250000000001) [data into the dataset is also done using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=89.95518181818181) [the AutoMLClient. The client. import\_data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=93.55663636363636) [will perform the import. This Python code](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=96.14942857142856) [assumes that your training data is located](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=99.58020000000002) [in a cloud storage bucket. 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The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=112.92928571428575) [automl\_translation\_model. py file contains](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=114.44277777777778) [code that invokes the Python client to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=116.84188888888887) [start training on your custom model. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=120.45299999999999) [this file has been downloaded let's take a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=123.12384615384615) [look at what Python code this contains.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=125.09861538461534) [Here is the function that's invoked when](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=127.34518181818181) [we create a new translation model, it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=130.28327272727273) [takes in the project\_id, the region, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=132.61159999999992) [dataset\_id, and the name of our model. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=135.21869999999996) [AutoMLClient class is what we need to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=138.65991666666667) [instantiate in order to create a model.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=140.9483333333334) [We'll call the create\_model function on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=143.7641818181818) [this class. The configuration parameters](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=146.78054545454543) [to create this model are passed in in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=148.60636363636362) [form of a Python dictionary. In order to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=151.1479285714286) [run this Python code to access the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=153.97935714285725) [AutoMLClient and the other libraries that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=156.57899999999998) [we access we need the Google Cloud AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=159.06899999999993) [package installed on your Cloud Shell](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=162.27772727272733) [machine. We do this using a pip install.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=164.6008181818183) [Once the Python package has been installed](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=167.66846153846154) [on Cloud Shell we are ready to create our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=170.29863636363638) [dataset. We do this by invoking the python](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=173.2923636363637) [automl\_translation\_dataset. py program, we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=177.96733333333324) [call the create\_dataset function that is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=179.8984) [our import argument, we want our dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=181.96960000000004) [to be named de\_to\_en\_dataset, we want to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=185.2811111111111) [translate from the source language,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=188.33499999999995) [German, to the target language, English.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=189.9299999999999) [Hit Enter and our dataset will be created](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=192.02566666666664) [and all of the details of this dataset you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=195.30433333333323) [can see right here on screen. Here is the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=198.10446153846158) [dataset\_id and the dataset display name,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=200.78999999999996) [the source and target language, and other](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=202.7659999999999) [pieces of information. Copy over the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=205.89628571428565) [dataset ID and set an environment variable](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=208.49545454545455) [called DATASET\_ID, this will allow us](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=210.81118181818186) [quick look up of the dataset\_id. We'll now](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=213.82881818181818) [invoke the same Python program in order to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=217.7511333333333) [import data into our dataset. We'll invoke](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=220.54366666666658) [a different function within this program](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=222.95322222222222) [though, we want to call the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=224.94588888888893)[automl\_translation\_dataset. py, we want to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=227.30345454545457) [invoke the import\_data function in there,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=229.32890909090915) [specify the DATASET\_ID, and our CSV file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=232.57127272727277) [that we uploaded to our cloud storage](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=236.37866666666667) [bucket. The CSV file points to the TMX](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=239.1973333333334) [file which contains our data. Wait for a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=242.4635833333334) [little bit, the import of our data is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=245.722) [complete. I'm going to leave this current](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=248.95666666666673) [browser tab open, it has Cloud Shell](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=250.9869999999999) [activated, and I'm going to open up a new](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=252.884) [tab pointing our GCP dashboard. Click on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=257.14871428571416) [the hamburger icon on the top-left to open](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=259.96) [up all of the services that GCP has to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=261.728) [offer, and let's go to AutoML translation.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=264.7607500000001) [If you click on Get started with AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=267.769) [here you'll find that we have our dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=270.0507142857143) [created and data has been imported into](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=272.66709090909086) [this dataset. Notice that we see here the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=275.83490909090887)[same import warnings that we saw earlier](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=278.59169230769237) [when we imported via the web UI. We've](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=280.752) [successfully created a new dataset and imported data using the command line.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=9&mode=live&start=284.0026666666668)

[Prediction Using the Command Line](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live)

[In this clip we'll continue working with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=1.956) [AutoML on the command line. This time](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=3.979000000000001) [we'll use the automl\_translation\_model. py](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=6.4256) [program in order to create and train our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=8.9296) [model. We want to explicitly invoke the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=12.635333333333335) [create\_model function that we saw within](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=15.72) [this Python program. We specified the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=18.32)[DATASET\_ID and we specified the display](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=20.926846153846157) [name of our model. We want to train a new](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=23.540538461538468) [custom model using the data that's present](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=26.93085714285715) [in this dataset, this is the dataset that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=28.853357142857156) [we just created. The training process, as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=32.06800000000001) [you know, takes several hours. You can go](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=34.846666666666664) [to the UI and see the training of your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=37.54171428571428)[translation model, you can see that the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=39.93185714285712) [current status is that your translation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=41.80999999999999) [model is being trained. If you click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=43.42639999999997) [through you'll get an option to cancel out](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=45.32161538461538) [of this training process if you want to.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=47.501923076923056) [This you can do by clicking on the CANCEL](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=49.38328571428573) [button that you see here on screen. I'm](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=51.53) [going to let my model train through to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=54.328428571428574) [completion and 5 or 6 hours later the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=56.27585714285716) [model has been trained completely. If you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=59.065000000000005) [click on the bulb icon on the left that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=62.080866666666665)[will give you access to all of the models](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=63.86226666666665) [that you currently have up and trained.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=66.29441666666669) [These are your custom models. Right now we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=68.591) [have just the one model and here is the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=71.00638461538459) [model ID. Copy the model ID over and we'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=73.84239999999998) [now switch back to the browser tab where](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=76.82679999999993) [we had Cloud Shell open. Set the MODEL\_ID](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=79.81909090909092) [environment variable to point to your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=83.1749090909091) [current MODEL\_ID. We can get the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=86.00472727272728) [evaluation results of this model,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=88.00500000000001) [including its BLEU score by calling python](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=89.32625000000003) [automl\_translation\_model. py. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=93.17699999999999) [specifically want to invoke the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=95.269625) [list\_model\_evaluations function. Make sure](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=98.08775000000001) [you pass in the MODEL\_ID as an input](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=99.85592307692309) [argument as well. And here you can see the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=102.41961538461544) [evaluation results for our current model.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=105.88199999999998) [The earlier custom model that we built was](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=108.383) [trained on the same dataset, and you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=110.58900000000001) [see that the BLEU score is very similar,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=113.1261333333333) [in the 20s. Let's set up a new text file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=115.99439999999991) [using the Nano editor and specify a German](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=118.97350000000002) [sentence that we want translated to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=121.27374999999999) [English. This is a review in German and we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=123.65424999999998) [want to translate this to English, and we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=126.35671428571432) [do this by invoking the predict. py](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=129.12) [program. We've used predict. py before,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=132.73899999999998) [there is no change in that code. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=134.9005833333333) [specify the sentences we want translated,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=137.58536363636364) [our current project ID, and the MODEL\_ID](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=139.87954545454545) [as input arguments. Hit Enter and here is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=142.57824999999997) [our translated response from our AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=145.6962499999999) [custom translation model. We've](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=149.14037499999998) [successfully trained our custom model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=151.4044) [using the command line. And on this note,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=153.5614) [we come to the very end of this module](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=156.1525)[where we saw how we could use AutoML to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=158.099875) [build a custom model for translation. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=161.14849999999993) [created a new model and specified our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=163.9443) [training data and trained this model from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=166.71839999999997) [scratch. AutoML ran training for several](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=169.78749999999997) [hours, and it then benchmarked our model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=172.43272727272728) [against the Cloud Translation API, which](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=175.01381818181827) [uses Google's NMT model. You can train](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=178.10857142857145) [your custom models on AutoML using both](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=181.64223076923074) [the web UI, as well as the command line,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=183.70076923076914) [and in this module we saw examples of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=186.68779999999995) [both. You can train and deploy your models](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=189.4941999999999) [on AutoML and then use them for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=192.1097333333333) [prediction. AutoML automatically creates a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=194.37446666666662) [unique endpoint that you can hit to get](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=196.444) [prediction results. In the next module](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=199.93599999999995) [we'll see how we can use AutoML for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=201.9025384615385) [natural language processing, specifically sentiment analysis.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=145091cc-8977-46ff-a0f5-deb3a539ec50&clip=10&mode=live&start=204.08961538461554)

[Working with Language Using AutoML Natural Language](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live)

[Hi, and welcome to this module where we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=0) [learn how we can work with AutoML Natural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=3.1394285714285712) [Language models. The AutoML Natural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=6.840999999999999) [Language model is extremely powerful and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=9.869) [it allows you to classify text into the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=11.872999999999998) [categories that you specify. Out of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=14.894000000000002) [box you can use it for sentiment analysis,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=17.246600000000004) [but if you have more nuanced categories](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=19.02686666666668) [AutoML Natural Language works very well,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=21.341000000000005) [it'll allow you to build your own custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=24.189) [model trained on your dataset. Before we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=27.00746153846155) [dive into text classification with AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=29.406090909090906) [we'll see how classifiers are evaluated,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=31.31736363636363) [we'll talk about accuracy, precision, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=33.804874999999996) [recall, which are metrics that we use to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=36.71733333333333) [see how well our classifier performs.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=39.591999999999985) [We'll then move onto a hands-on demo where](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=41.748) [we use AutoML for sentiment analysis,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=44.104923076923065) [we'll train our own custom model on our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=46.054181818181824) [specific dataset. Building good sentiment](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=49.863636363636395) [analysis models from scratch requires a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=52.0367) [huge training dataset. The Spikey Sales](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=54.478100000000005) [organization hasn't been around for very](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=57.16444444444443) [long, they don't have a huge corpus of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=59.50271428571429) [reviews, which is why they would prefer to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=61.561571428571455) [use AutoML that uses transfer learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=63.85566666666667) [under the hood to learn from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=65.75266666666664) [previously-trained models. They would](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=68.52633333333331) [still like their model to capture the nuances of their specific dataset.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=0&mode=live&start=71.597)

[Cloud ML APIs vs. AutoML for Text](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live)

[If you have a very standard use case Cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=2.768) [ML Natural Language APIs offer you a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=5.832846153846153) [solution out of the box, you don't have to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=7.799846153846153) [do any training yourself. Cloud Natural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=9.614384615384619) [Language API allows you to extract](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=11.855) [information about people, places, events,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=14.430666666666667) [perform sentiment analysis, syntax](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=17.114) [analysis, and a whole host of other](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=18.70636363636363) [features are available. The pre-trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=21.493) [model available using the Natural Language](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=23.952) [API performs syntax analysis, it can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=26.81066666666666)[extract tokens and parts of speech, it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=29.377333333333333) [performs entity recognition, it can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=32.117111111111114) [recognize persons, locations, landmarks,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=34.44266666666668) [and products. It can perform content](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=36.3129) [classification as well. It's capable of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=39.16229999999999) [dividing text content into 700-plus](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=41.952) [predefined categories, it can also](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=44.22699999999999) [categorize based on topic. Or if you want](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=46.667000000000016) [to perform a simple sentiment analysis you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=49.79771428571429) [can use the Natural Language API directly](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=51.8027142857143) [without doing any training with AutoML.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=54.40880000000001) [But if you have a standard use case, which](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=57.029) [is a little more nuanced that's when](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=59.27449999999998) [AutoML is important. AutoML uses transfer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=61.28639999999999) [learning and neural architecture search to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=63.57959999999998) [build a custom model for your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=66.38133333333332) [data. If you have a very standard use case](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=69.94666666666663) [such as sentiment analysis, you might want](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=72.75733333333334) [to use the Cloud Natural Language API](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=74.94381818181819) [directly. You won't do any training with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=77.36072727272729) [AutoML, you won't build a custom model.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=79.36015384615386) [But if your use case is more nuanced, or](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=81.29) [if it's unusual, then you'll want to train](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=83.99975000000005) [your own custom model using AutoML. In the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=86.81618181818183) [case of sentiment analysis if you feel](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=89.52583333333334) [that the Natural Language API will not](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=90.97425000000004) [capture the nuances in the text that is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=92.90392307692306) [specific to your website or to your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=95.5217692307692) [organization, then AutoML is right for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=98.27023076923076) [you. AutoML is extremely powerful and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=100.69146153846152) [useful, but you should be aware of how](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=102.45124999999997) [much it's going to cost you before you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=104.62591666666665) [start using it. Training a Natural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=106.83324999999994)[Language custom model is absolutely free](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=108.57763636363636) [for the first 2 hours, beyond 2 hours](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=110.41090909090907) [it'll cost you $3 an hour. If you're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=113.17250000000003) [training dataset is very large and it's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=115.98299999999999) [fairly complex training will take longer.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=118.29299999999998) [For prediction the first 30, 000 text](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=120.54136363636363) [records that you pass into the API are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=123.321) [absolutely free. If you're about 30, 000,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=126.10580000000002) [but under 5 million text records the cost](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=128.25021428571426) [will be around $5 per thousand records. If](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=130.5673571428572) [the number of records you use for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=133.29138461538452) [prediction goes beyond 5 million you need to contact Google separately.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=1&mode=live&start=136.378)

[Confusion Matrix: Accuracy, Precision, and Recall](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live)

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Let's consider a simple classifier](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=13.251428571428573) [that is used to detect based on radiology](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=15.715181818181819) [reports whether a person has cancer or](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=18.95663636363635) [not. So you feed a bunch of medical](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=21.22378571428572) [reports into this classifier, and this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=23.554642857142877) [classifier doesn't really work very well,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=25.665500000000005) [it always classifies the import reports as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=27.888555555555556) [normal, the person doesn't have cancer.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=30.71344444444445) [This is the all-is-well binary classifier.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=33.438818181818185) [The thing is that such a classifier might](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=36.225) [be right 99. 99% of the time, but for the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=39.46766666666665) [0. 01% of people who do have cancer this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=43.247352941176466) [is not really good news. Such a classifier](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=46.074411764705864) [cannot be evaluated on the basis of its](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=48.76225) [accuracy. This is because the dataset we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=51.74158333333333) [fed into such a classifier is skewed, some](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=53.636) [labels may be much more common than](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=55.97516666666667) [others, other labels, such as the label of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=58.835249999999995) [no cancer here, are rare. Accuracy is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=61.663) [poor evaluation metric for this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=64.86233333333334) [classifier. And this is where something](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=67.5245555555556) [called a confusion matrix to evaluate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=69.62336363636366) [classifiers really helps. A confusion](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=71.503) [matrix can be thought of as a matrix setup](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=73.21341666666667) [of predicted labels versus actual labels.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=76.54775000000001) [In the case of our binary classifier, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=79.367) [predicted labels could be cancer, no](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=81.81099999999996) [cancer, and the actual label could be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=83.68976923076924) [cancer or no cancer. The confusion matrix](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=85.98846153846159) [could be extended to any number of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=88.30972727272726) [categories, it would just be a larger](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=90.66109090909085) [matrix. For example, let's assume that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=92.66500000000003)[this is what the 2x2 grid for our binary](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=94.33300000000007) [classifier looks like. We have a number of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=98.13972727272723) [instances here filled in in these cells.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=101.10550000000002) [Let's consider the very first cell matrix](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=103.405) [here, which has the number 10. Now here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=105.62575000000001) [are those instances that our machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=108.46008333333333) [learning classifier predicted cancer and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=110.6596) [the actual label was cancer as well,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=112.66760000000001) [actual label was equal to the predicted](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=115.31200000000001) [label, all of these labels were true](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=117.73400000000004) [positives, which I represent using TP. Now](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=120.0705) [let's consider the cell just below this,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=122.4173076923077) [here the actual label was no cancer, but](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=124.91146153846157) [our machine learning classifier predicted](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=127.80030000000001) [that the person indeed did have cancer.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=129.6458) [The prediction from our classifier was](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=132.34700000000004) [wrong, these instances are false](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=134.88822222222223) [positives, or FPs. Now let's consider the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=137.77933333333334) [instances over to the bottom-right here.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=140.69759999999997) [here the actual label was no cancer, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=142.473) [person did not actually have cancer, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=144.51607692307704) [our model said no cancer as well. Actual](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=146.47366666666665) [label is equal to predicted label, these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=149.30336363636363) [are true negatives. And finally, we have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=152.43490909090906) [this last cell over to the top-right. Here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=155.02318181818185) [the person actually had cancer, but our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=157.59175000000002) [model said no cancer. People here did not](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=160.3060000000001) [actually receive the treatment they](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=163.00019999999998) [needed, these are false negatives. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=164.42919999999995) [we've understood these categorizations and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=167.55999999999995) [we have them labeled correctly, let's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=169.69211111111107) [consider the different evaluation metrics](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=172.08866666666665) [for our classifier, starting with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=174.302) [accuracy. Now when we talk about accuracy](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=176.84266666666667) [we are looking for all of the cases where](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=178.87099999999998) [the actual label was equal to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=181.1456) [predicted labels. So what we are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=183.79580000000004)[calculating here is true positives plus](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=185.97699999999998) [true negatives upon the total number of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=188.11299999999994) [instances that were classified. If you had](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=190.92999999999995) [an as-is-well binary classifier for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=193.66263636363635) [medical reports you'd find that its](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=195.4103636363636) [accuracy would be very, very high. For](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=197.42566666666667) [example, here we have an accuracy of 99.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=199.8243) [12%. And in many instances this might be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=203.5467000000001) [the right evaluation metric for your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=205.77833333333328) [classifier, especially if the training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=207.48366666666666) [dataset isn't heavily skewed towards one](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=209.70200000000003) [label or another. However, in this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=212.1946) [particular case where we are classifying](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=214.51780000000005) [cancer there are many issues with this.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=216.7329166666667) [All these false positives our patients](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=219.292) [were on chemotherapy or radiation when](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=221.61580000000006) [it's not really required, and all of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=223.83372727272726) [false negatives here are people who should](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=226.50863636363633) [be getting chemotherapy and radiation, but](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=228.87519999999992) [they are not. It's pretty clear that in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=230.9134) [this particular case accuracy is not](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=233.647) [really a great evaluation metric and we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=236.01100000000002) [need something else. And that's where](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=238.51749999999998) [we'll study precision. In the case of our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=240.95342857142853) [cancer classifier you can think of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=243.55300000000005) [precision as the accuracy of our model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=244.96300000000014) [when it flags cancer. In how many of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=247.7165) [cases where the model detects cancer does](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=251.25333333333327) [it get right? That's what precision tries](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=253.33699999999988) [to measure. Expressed mathematically,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=256.13) [precision is true positive on the total](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=258.03) [number of cancer predictions, and in our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=260.8039090909091) [model it's about 66. 67%, not really a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=263.7064615384615) [great number. Using precision you can see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=267.2196923076921) [that this model gets one in three cancer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=270.3543333333332) [diagnoses wrong. Once you have this metric](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=273.96446666666634) [you'll know that you can't completely rely](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=276.55283333333347) [on your classifier for cancer detection,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=278.913) [you need other means as well. Another](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=281.16599999999994) [matrix that can be used to evaluate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=283.80199999999996) [classifiers is recall. Recall is the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=286.48299999999983) [accuracy of your model when cancer is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=288.79524999999995) [actually present. For all of those medical](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=291.50949999999983) [reports where the patient actually had](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=293.84958333333327) [cancer how well did your model perform in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=295.7270833333331) [detecting cancer? Here is the mathematical](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=299.50188888888897) [expression for recall using this confusion](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=301.9775454545454) [matrix. True positive upon true positive](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=304.20736363636354) [plus false negatives. And in our case, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=306.809625) [recall of our model is 71. 42%. For](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=310.2346666666666) [patients who actually have cancer our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=313.4922307692308) [model tends to miss two out of seven](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=315.5096153846155) [cases. The right metric to evaluate your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=318.3655454545455) [classifier depends on your use case. Are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=321.3004545454548) [false positives very significant or are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=324.26983333333345)[false negatives very significant? You need to decide.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=2&mode=live&start=326.8268333333336)

[Probability Threshold for Classification](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live)

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Let's say you had an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=8.11433333333333) [ML-based binary classifier, which you use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=10.774000000000003) [to classify whales as either fish or](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=12.478000000000007) [mammals. You'll feed in the features of a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=15.861428571428569) [whale as an input to your classifier,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=18.15750000000001) [which has been trained on a huge corpus](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=19.937) [and your classifier will produce a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=22.072333333333336) [prediction, it'll say yes, I think the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=23.842461538461542) [whale is a mammal. Now the output of your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=26.301076923076938) [classifier is not really a predicted](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=29.37808333333333) [label, it is a probability score. What](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=31.384583333333325) [your classifier would have actually](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=33.95536363636365) [out-put is something like, I think the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=35.819) [probability of this animal being a fish is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=38.15318181818181) [0. 45. Your classifier then interprets](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=41.49863636363637) [that, this probability score is below the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=44.51609090909093)[threshold for the whale being a fish,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=47.156500000000015) [that's why the whale is a mammal. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=49.63925) [outputs of all classifiers are probability](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=52.40125) [scores, and that category which has the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=54.435399999999994) [highest score is the predicted label of a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=56.765) [classifier. The simplest possible binary](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=60.04411111111109) [classifier uses logistic regression under](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=61.65411111111111) [the hood, we don't need to know the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=63.636888888888905) [mathematics of this, but you can imagine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=65.93738461538464) [that for all of your data points it plots](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=67.696) [an s-curve on an axis. On the y-axis we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=71.35835714285709) [have the probability of the animal being a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=74.4776153846154) [fish, and on the x-axis we have our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=76.64684615384621) [training data. And all of our data fits](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=79.70244444444444) [this s-curve that the logistic regression](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=82.66614285714287)[model draws. And along this s-curve we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=84.83428571428574) [have various probabilities, anything from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=87.92609090909095) [5% going up to 99%. You can see here that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=90.29518181818189) [because our y-axis has the probability of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=93.94921428571422) [animal being fish at 95% and animal that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=96.46661538461537) [lives in the water, breathes with gills,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=99.46907692307686) [and lays eggs is most likely to be a fish.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=102.34671428571428) [The way the classifier categorizes any](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=106.726) [data that you feed it, the way it makes](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=108.78127272727275) [prediction, is by using a threshold value.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=111.72527272727271) [Let's say this threshold is 50%, it knows](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=113.88) [that for a probability score of under 50%](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=116.72799999999995) [the data that you've fed in is an animal](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=119.90999999999998) [that's a mammal. If the probability score](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=124.11599999999994) [that was output is higher than 50% then](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=126.93215384615385) [this animal that you fed in is probably a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=129.7604615384615) [fish. This threshold value for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=133.7913333333333) [classification is a tweakable parameter,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=135.97855555555557) [and you'll find that when you train your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=138.138) [AutoML model there is a slider there that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=140.41369230769223) [you can use to tweak your threshold and see how the model changes.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=3&mode=live&start=144.836)

[Types of Classifiers](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live)

[Let's briefly talk about the different](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=2.022) [kinds of classification you can perform.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=4.093500000000001) [The simplest of course is binary](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=6.165) [classification, where the output can be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=8.073)[one of two values, yes/no, true/false,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=10.767545454545456) [up/down, positive/negative. The output is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=13.8261) [a binary categorical variable. Or you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=17.891599999999997) [have multiclass classification. For](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=22.453500000000005) [example, if you want to classify images of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=24.09491666666667) [digits your output values will be digits](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=26.750249999999987) [from 0 through 9. There are multiple](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=28.902000000000005) [categories, N categories where N is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=30.925) [greater than 2. Multi-label categorization](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=33.785000000000004) [is when multiple labels can be applied to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=36.05866666666667) [your input. The output is a tuple of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=39.43333333333332)[multiple binary variables and they need](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=42.193307692307684) [not be disjoined, for example your output](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=44.10961538461537) [can be true, as well as female, or female](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=46.4736153846154) [and false. And the last category of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=49.70083333333333) [classifiers is the multioutput](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=52.64724999999997) [classifiers. Such classifiers are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=54.53485714285714) [combinations of multiclass, as well as multi-label classification.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=4&mode=live&start=57.03428571428572)

[Create Dataset and Upload Training Data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live)

[In this demo we'll see how we can use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=1.571) [AutoML for text classification,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=4.22946153846154) [specifically sentiment analysis. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=5.411) [Spikey Sales organization doesn't have a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=7.532142857142857)[whole lot of reviews yet. For all of their](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=9.951230769230769) [products they want to be able to use their](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=12.435923076923077) [existing reviews and train a model in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=14.900571428571435) [AutoML to quickly extract product](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=17.16614285714286) [sentiment. In the navigation menu for your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=20.286857142857144) [Google Cloud Platform account click on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=22.76445454545454) [Natural Language. You might be asked to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=24.59016666666667) [log in once again, simply choose the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=26.55833333333334) [account that you've been working with.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=28.679666666666662) [Allow AutoML to access all of the services](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=30.673) [you needed in order to train AutoML for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=33.16592307692307) [Natural Language processing. Once you're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=36.282000000000004) [at the Cloud Natural Language page, Get](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=38.353818181818184) [started with AutoML, that's what you need](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=40.152181818181816) [to click here. You'll be taken to a page](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=42.35725000000001) [very similar to the one we saw when we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=44.75987500000001) [used the translation API. Click on the SET](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=46.84168750000002) [UP NOW button, a bucket corresponding to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=49.44810000000001) [this API will automatically be created for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=51.98533333333332) [you. We then enabled AutoML Natural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=54.644166666666635) [Language, click on the NEW DATASET link on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=56.72941666666665)[top in order to create a new dataset and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=59.43953846153846) [import your data. I'm going to call this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=62.34238461538464) [dataset spikey\_analysis, and I'm going to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=65.17818181818183) [upload some reviews from my local machine.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=67.42) [These reviews have already been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=70.165) [preprocessed by me to be in the format](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=71.45166666666668) [that AutoML expects. At the time of this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=73.66041666666666)[recording the AutoML Natural Language API](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=76.91974999999996) [accepts only. txt or. csv file formats.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=80.0749) [I've done some preprocessing on these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=84.585) [reviews to get a subset of data that works](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=85.90176923076926) [for us. The original source of these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=88.10216666666666) [reviews is available here at Kaggle. This](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=90.42674999999997) [file contains the review text and the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=93.06700000000001) [corresponding label. The label can be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=95.94400000000002) [positive or negative. If you're building a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=98.086) [custom model using AutoML Natural Language](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=100.39599999999999) [you need at least 20 text records and you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=102.75975000000001) [can go to a maximum of 100K text records.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=106.45554545454544) [Because they're performing sentiment](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=110.274) [analysis we have just two output](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=111.66640000000001) [categories, positive and negative. AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=113.755) [can accept a minimum of 2 categories and a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=115.8935) [maximum of 100 categories. Your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=119.7455) [dataset can have up to 100 different](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=121.97792307692308)[labels and you can classify into these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=123.79415384615383) [labels, but each label should apply to at](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=125.88324999999998) [least 10 source documents. Let's go back](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=128.68658333333326) [to our create dataset page. You can upload](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=131.79209090909083) [a CSV or text files from your local](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=134.8538) [machine or you can also point to a CSV](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=136.89593333333337) [file that lives in a cloud storage bucket.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=139.61546153846152) [Notice our cloud storage bucket here has](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=142.333) [the project spikey-automl as the prefix](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=145.0692999999999) [and lcm is the suffix. My review CSV file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=147.2932) [is on my local machine, I'm going to click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=150.44680000000008)[on the SELECT FILES button that allows me](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=153.05200000000008) [to upload this file from my local machine,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=155.2504) [choose the reviews\_dataset. csv file,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=157.828) [click on Open, and your training data will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=159.9325454545454) [be uploaded. You can scroll down to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=162.912) [bottom now and click on the CREATE DATASET](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=164.72800000000004) [button. Wait for a little bit so that your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=166.84592307692304) [training data is imported into your dataset and AutoML is ready for training.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=5&mode=live&start=170.145)

[Training the Sentiment Analysis Model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live)

[Let's explore the data that we just](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=2.164) [uploaded. Before we start training you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=3.830875000000001) [see that we have a total of 25, 000](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=5.6305999999999985) [reviews and all of these reviews have been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=7.973) [labeled either positive or negative. These](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=10.900999999999998) [are the labels that are available in these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=12.993923076923076) [reviews, there is one label though that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=15.09730769230769) [seems a little suspicious, it simply says](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=17.196545454545458) [labels, and that is the header row in our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=19.64081818181819) [CSV file. The header row was also](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=22.536400000000004) [considered to be a text item, and we have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=24.580333333333332) [this one label that does not match our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=27.113533333333333) [positive and negative labels. You can see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=30.352818181818172) [all of the review sentences that we've](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=32.915) [uploaded here. Notice that there is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=34.949666666666666) [checkbox under each of these sentences,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=36.86963636363635) [it's possible to manually classify these](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=38.476) [sentences. Once you've uploaded your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=41.4742857142857) [training data AutoML allows you to label](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=43.31872727272728) [the text data from within the UI as well.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=45.672) [So if you have a large, unlabeled dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=48.10799999999997) [you can upload it and you can manually](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=50.435)[classify the text items from within AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=53.247000000000014) [as well. There seem to be some warnings](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=55.842500000000015) [while we imported our data, let's take a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=58.713499999999996) [look at what they are. When you click on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=60.48549999999999) [VIEW DETAILS you'll see that AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=62.96209090909092) [detected duplicate sentences. We are okay](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=65.01572727272729) [with duplicate sentences for our training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=66.99600000000002)[data, we can just ignore this warning. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=69.04075) [are ready to start training our custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=72.15933333333334) [model. When you go to the TRAIN tab,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=74.05866666666665) [though, you'll notice something, the START](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=75.77454545454543) [TRAINING button is not enabled, and there](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=77.29839999999999) [is a message here for us. The message](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=79.74279999999996) [basically says that for particular labels](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=82.45916666666668)[we don't have a sufficient corpus of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=84.32266666666672) [labeled documents, and that is the labels,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=86.73319999999998) [the header row. The header row, which has](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=89.459) [the term labels is treated as a separate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=92.32546153846152) [category, and there is insufficient](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=95.38069230769233) [training data in that category. We can fix](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=97.4868461538462) [this in the AutoML UI very simply. Go to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=100.34360000000001) [the TEXT ITEMS tab, and under the labels](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=102.61646666666667) [here that you see on the left-hand side,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=104.70233333333334) [click on the label, which has insufficient](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=107.02027272727273) [data, there is a three-dot menu, you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=109.38690909090909)[click on this menu and remove this label](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=111.87800000000004) [from consideration in our training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=114.45514285714286) [process. Click on Remove label, this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=116.57585714285713) [particular record will not be considered,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=118.77636363636367) [and you can train with the remaining](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=120.908) [records. Go back to the training tab and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=123.84624999999997) [you'll find now that the START TRAINING](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=125.8501538461538) [button is now enabled. There is sufficient](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=127.53518181818181) [data in each category for us to start](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=129.8254545454546) [training our custom model. The AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=132.91088888888885) [Natural Language model requires at least](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=135.35683333333333)[100 text items to belong to each category.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=137.64533333333333) [Let's click on the START TRAINING button](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=140.44033333333329) [and kick start our training process. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=142.66166666666655) [can customize the name of your model; if](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=145.00250000000008) [you ended with an underscore AutoML will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=147.8524) [automatically append a model version](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=150.7447999999999) [number starting with 0. Let's start the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=153.1625)[training process, and remember this can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=156.07327272727272) [take several hours to run. For this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=157.88581818181817) [training data it took about 3 hours.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=160.34500000000006) [Meanwhile, we'll go back to our project](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=162.942) [dashboard, use the Navigation menu, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=165.08209090909088) [take a look at our cloud storage buckets.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=167.1596) [And here is the new bucket,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=170.578) [spikey-automl-lcm created by the AutoML language translation API.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=6&mode=live&start=173.39854545454548)

[Evaluating the Classifer and Using It for Prediction](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live)

[A couple of hours later you can check on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=0) [your model, it should have trained](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=3.085) [completely. Click on the TRAIN tab here,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=5.012714285714287) [and let's see the evaluation matrix for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=7.4495999999999984) [your classifier. You can see an overview](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=9.917800000000002) [of the evaluation matrix and you can click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=11.87478571428571) [on the SEE FULL EVALUATION button to see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=13.877642857142849)[additional metrics. You can see that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=17.20955555555555) [around 25, 000 text items were analyzed](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=19.407333333333337) [and categorized into 2 categories. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=21.712666666666678) [average precision for this model was](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=24.102499999999996) [around 91%. Now a perfect classifier will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=26.61709090909091) [have an average precision of 1, and a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=29.795727272727266) [binary classifier, which picks at random,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=32.8770909090909) [will have an average precision of 0. 5..](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=34.94) [91 is a pretty good score, and this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=37.43942857142855) [captures how well our model performs](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=40.19290909090909) [across all metrics, precision as well as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=42.82963636363636) [recall. This tries to combine both of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=45.44338461538462) [these metrics. Here you can see that our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=47.71030769230771) [precision is 87%, and recall is also](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=50.85520000000002) [around 87%. It's possible in AutoML to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=53.76860000000004)[tweak these precision and recall values,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=56.591000000000015) [you can do this by configuring your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=58.979) [threshold. Click on the SEE FULL](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=61.44737500000002) [EVALUATION button and you should see a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=63.60299999999999) [threshold right there. The Score threshold](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=66.12720000000002) [used was. 5 by default, you can tweak the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=68.2356923076923) [Score threshold to get that precision and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=71.3157692307692) [recall value that works for you. I'm going](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=73.831) [to use the slider and slide it over to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=76.529375) [right in order to increase my Score](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=79.15624999999999) [threshold. As I increase this threshold my](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=81.4364)[classifier is actually getting more](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=84.305) [conservative, the classifier is less](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=86.89666666666666) [likely to get false positives. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=89.32208333333332) [precision of our model goes up, recall](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=91.43458333333328) [goes down. This is our tradeoff. You can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=94.18924999999999) [slide it over to the right until you get](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=97.64093333333332) [to almost 1 point, or you can see that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=99.75113333333329) [precision is now almost 95%, and recall](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=102.58971428571428) [has fallen. On the other hand, if you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=105.25071428571428) [tweak your threshold downwards you'll find](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=107.74399999999997) [that you're classifier has lower precision](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=109.477) [values, but higher recall values. As we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=112.68645454545458) [slide downwards our threshold become less](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=116.09811111111112) [conservative, we're more likely to get](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=118.30944444444448) [true positives, precision goes down, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=120.86449999999996)[recall goes up. We can slide all the way](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=123.28213333333333) [left and you'll see that this is true.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=125.36233333333332) [Recall is 100% here, but precision is just](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=127.643) [50. Scroll up, click on the PREDICT tab,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=130.643) [and let's use this model for prediction.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=133.11250000000007) [You can see that our model is called](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=135.207) [spikey\_analysis version 0. We'll test our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=138.28409090909088) [model on new text. We'll type in some text](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=140.296) [here and see what a sentiment is like. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=142.87) [can also use the REST API or PYTHON for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=145.73841176470583) [prediction. Scroll back up, let's try](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=148.69094117647046) [predicting with the UI, here is a review](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=150.2332307692308) [that's fairly positive. Click on the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=152.176) [PREDICT button and you'll see a prediction](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=153.98350000000005) [off to your right. You can see that with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=156.08007692307692) [the confidence of 1. 0 our model is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=158.6817692307692) [certain that this is a positive review.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=161.62650000000005) [Here is another review that's a little](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=164.535) [more nuanced, let's click on the PREDICT](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=166.37541666666658) [button here and see what the score is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=168.33345454545457) [like. The prediction from our model says](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=170.90727272727287) [negative review, but the confidence score](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=173.12172727272727) [is just 65%, it's more nuanced. Let's try](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=175.20541666666668) [another review here, this review is very](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=179.25675) [negative. The confidence for a negative](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=182.28479999999996) [prediction should be higher, and you'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=184.548) [find that this is indeed the case. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=186.28799999999995) [prediction says negative with a score of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=188.6616666666667) [1. Switch over to our project dashboard,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=191.06733333333344) [activate Cloud Shell, and let's predict](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=193.46033333333327) [using the command line. We need to export](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=195.394) [the environment variable,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=197.81799999999998) [GOOGLE\_APPLICATION\_CREDENTIALS, and have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=199.347) [it point to our service account](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=201.186) [credentials before you use the API. We're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=203.77899999999994) [using curl to hit the REST API, you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=206.44876923076924) [copy/paste the curl command for your model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=209.09269230769243) [from the AutoML Natural Language page. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=212.2548) [model ID is part of our endpoint URL, your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=215.9654) [model ID will be a little different,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=218.57) [something to be aware of. We can pass in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=220.91957142857143) [the payload that we want for this model in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=223.949) [the form of JSON, and in the response we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=225.68825000000007) [get a JSON result, and we can see that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=228.12079999999995) [this classification is 1, this is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=230.9) [positive sentiment. Just like we did with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=234.00255555555563) [earlier demos you can predict using the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=236.18858333333336) [predict. py Python program as well. On](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=238.008) [this note we come to the very end of this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=242.04966666666667) [module where we used AutoML for Natural](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=244.3463333333334) [Language processing. AutoML allows you to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=246.58259999999999) [build your own custom model that trains on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=249.21779999999998) [your dataset, so nuances from your dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=252.38933333333333) [can be captured with this custom model. We](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=255.08100000000002) [first saw how we could evaluate](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=257.94616666666667) [classifiers that we build using machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=259.59716666666674) [learning using metrics such as accuracy,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=261.44190000000003) [precision, and recall. We then performed](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=264.25530000000015) [sentiment analysis using AutoML and used](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=266.8546363636364) [our model to classify text reviews. In the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=269.2399090909093) [next module we'll see how we can use AutoML for image classification.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=fef2a0cf-8261-4c0d-8db3-f42fed026fa0&clip=7&mode=live&start=272.3893076923078)

[Working with Images Using AutoML Vision](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live)

[Module Overview](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live)

[Hi, and welcome to this module where we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=0) [work with the AutoML Vision API. We'll use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=3.6382857142857143) [it to build a custom classification model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=6.825333333333334) [for our images. AutoML Vision requires you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=9.12) [to upload the images that you want your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=11.640666666666668) [model to train on, you can also label](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=13.926) [these images using the UI. Once you have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=16.595538461538464) [your training data you can build your own](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=18.99138461538461) [custom model off of that data. The Spikey](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=20.93107692307691) [Sales ecommerce site is considering a move](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=23.492499999999996) [into groceries and they want to use AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=25.879153846153844) [Vision to build a model that automatically](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=28.360384615384607) [classifies their products, especially](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=31.176999999999996) [their grocery products, such as fruits and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=33.18677777777778) [vegetables. The AutoML Vision APIs have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=36.22322222222222) [been optimized for use with real-world](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=38.68741666666667) [photographs. They don't really work well](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=41.12391666666668) [if you use them for x-rays or handwritten](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=43.17357142857142) [notes. The input images that you feed in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=45.80328571428569) [for training can be in a variety of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=47.98793333333332) [formats, JPEG, PNG, GIF, ICO, all these formats are supported.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=0&mode=live&start=50.109)

[Cloud ML APIs vs. AutoML for Vision](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live)

[Beyond AutoML the GCP also offers](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=2.078) [pre-trained models that you can use for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=4.250428571428572) [prediction. The Cloud Vision API is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=6.784928571428571) [something that you can use for classifying](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=8.706583333333334) [images into thousands of categories,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=10.89) [detecting objects within images, detecting](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=13.279444444444449) [emotions. If you have a standard, typical](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=15.596909090909092) [use case you'll probably want to use the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=18.43827272727273) [Cloud Vision API, but if you want to build](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=20.940285714285714) [your own custom model and use transfer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=23.579500000000007) [learning and neural architecture search to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=25.705) [find the best model that fits your use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=27.56499999999999) [case you'll want to use AutoML. AutoML for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=30.324999999999996) [Vision works well when you use it with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=33.272) [real-world photographs. All of the models](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=36.0032) [have been optimized to work with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=37.838727272727276) [photographs, and they'll perform poorly on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=39.56781818181819) [x-rays, hand drawings, scanned documents,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=42.17850000000001) [any document or image that takes a human](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=44.42345454545455) [more than 2 seconds to classify and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=47.82927272727272) [categorize will likely not work well with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=50.201000000000015) [AutoML. Also when you're building a custom](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=52.49945454545455) [model using AutoML Vision your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=54.96663636363639) [images should be as close as possible to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=57.14224999999999) [the images you will use in prediction.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=60.12424999999996) [Here is some criteria that your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=63.003) [data needs to meet so that it can be used](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=64.93284615384617) [with AutoML Vision. You should have at](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=67.72614285714288) [least 1, 000 training images per label. If](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=69.7196428571429) [you have fewer than 1, 000 images per](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=72.20515384615388) [label likely the model won't be able to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=74.815) [identify that label very well. There is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=77.83099999999996)[minimum requirement with AutoML Vision if](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=80.57175000000001) [you don't have at least 10-50 images per](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=82.28325000000004) [label, AutoML will not train on that data.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=85.4959230769231) [You might need to remove those set of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=89.267) [images entirely from your training data.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=91.61614285714285) [If you have uncategorized images you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=93.378) [assign a special label called none of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=95.8793333333333)[above to those images. Also if you have a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=98.67185714285715) [skewed dataset there are certain labels](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=101.6894285714286) [that are more common than others, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=103.5516) [recommendation is that you have at least](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=105.63984615384615) [100x more images for the most common label](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=107.74576923076921) [as compared with the least common label.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=110.47160000000001) [So if you have about 100 images, for your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=113.322) [least common label you should have at](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=115.71600000000005) [least 10, 000 images for your most common](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=117.80675000000002) [label. Here are all the supported file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=120.54475000000008) [formats for your training data, JPEG, PNG,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=123.00663636363635) [BMP, ICO, WEBP, all of the common image](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=125.75557142857141) [formats are present here. If you want to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=129.6858571428571) [use your custom model for prediction](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=132.603)[though, you have to feed in your images in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=134.031) [the JPEG, PNG, or GIF format. There are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=137.0718571428572) [file size limits for training and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=139.75333333333336) [prediction images as well for training,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=141.49133333333342) [the maximum permissible file size is 30 MB](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=143.37550000000002) [for one image, for prediction it's 1. 5 MB](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=146.27750000000006) [per image. Before you start training your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=150.56988888888884) [image classifier you should be aware of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=152.88176923076924) [how AutoML is priced. training for the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=155.35546153846153) [first 10 models per month if you want to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=157.4324285714286) [train for just 1 hour it's free. For any](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=159.4227142857144) [additional hours you train for it's $20 an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=162.23530769230777) [hour. When you're using your model for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=165.11383333333333) [prediction the first 1, 000 images are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=168.07775) [absolutely free, and subsequently you pay around $3 per 1, 000 images.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=1&mode=live&start=170.98266666666672)

[Create Dataset and Import Training Data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live)

[In this demo we'll use AutoML to build a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=1.101) [custom model for image analysis, the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=4.053692307692308) [Spikey Sales organization is planning a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=6.2272) [foray into ecommerce for groceries. They](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=8.8108) [want to be able to upload a catalog of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=10.969666666666665) [fruits and have it be tagged](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=13.874181818181818) [automatically, and that's the custom model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=15.729272727272726) [they're going to build. Let's start off](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=17.469) [with a terminal window, fruits-360 is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=19.2295) [where all of our training data is located.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=21.300454545454546) [If you run an ls command here you'll see a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=24.811)[number of different directories. We have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=28.308142857142848) [zip files for training data as ls test](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=30.51918181818182) [data. Here is the URL from where I](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=33.767909090909086) [originally downloaded this fruit image](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=37.17161538461541) [dataset. Let's get into the training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=39.31276923076927) [folder here and see what the image data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=41.097153846153844) [looks like and see how it's organized. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=43.267) [can see here that we have subfolders here,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=45.665285714285694) [the folders here are the labels and the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=48.2715) [actual images for these labels lie within](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=51.50150000000002) [these folders. There are 75 categories of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=54.763999999999996) [fruits here, with a total of 38, 000](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=57.89492857142857) [images. Let's take a look at the image](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=61.333214285714284) [files in one of these categories, we'll cd](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=63.36007692307691) [into the Apple Braeburn folder, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=65.43116666666667)[running an ls command will show us that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=67.53766666666668) [all of these images are in the JPEG](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=70.14046153846151) [format. There seems to be about 320 images](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=72.53738461538454) [here, remember the recommendation for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=75.24118181818184) [AutoML Vision is about 1, 000 image per](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=76.9434) [label. We're about the minimum criteria](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=79.57060000000001) [though, so we can go over this. Let's](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=81.40858333333335)[navigate two folders up, within this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=83.8862) [directory you'll notice that we have a zip](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=86.07139999999998) [file of all of the images. This zip file](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=88.38263636363635) [is what you're going to upload as the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=90.9172) [training data for AutoML. We can now](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=93.77639999999998) [switch over to our GCP web console in the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=96.08361538461537) [spikey-automl project, use the Navigation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=98.71646153846147) [menu to go to ARTIFICIAL INTELLIGENCE,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=100.6886) [Vision, this is the link that you want,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=103.208) [and here we'll get started with AutoML.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=105.6181333333333) [We'll be taken to the same place that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=107.727)[we've seen earlier with the translation](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=109.70853846153844) [and the text classification models. Click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=111.66916666666667) [on the SET UP NOW button to enable AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=115.55692857142857) [Vision APIs and also to set up our bucket](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=118.0492857142857) [that this API will use. Click on the NEW](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=121.1905) [DATASET link as before, we'll create a new](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=124.44276923076923) [dataset called spikey\_fruits, which will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=126.88030769230768) [hold our fruit training data. Just like we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=129.51877777777776) [did with the translation model earlier we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=133.2360769230769) [can select the CSV file on Cloud Storage](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=135.10292307692296) [and this CSV file will point to our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=137.40942857142855) [training validation and test data. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=139.81971428571424) [training data happens to be located on my](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=141.82641666666666) [local machine though, so I'm going to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=144.50975) [choose the SELECT FILES button here to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=146.57999999999998) [upload images from my computer. This will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=148.94012499999997) [open up a folder, access Training. zip.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=151.73977777777776) [The image files in this training dataset](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=154.672) [will automatically be split into training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=156.94763636363632) [validation and test sets in the ration](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=159.30846153846153) [80%, 10%, and 10%. You have an option here](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=163.0200769230769) [in this model to enable multi-labels](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=166.64781818181822) [classification, which means, if you have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=168.456) [an image with multiple fruits in it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=170.52709090909096) [multiple labels will be assigned to that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=172.954) [image. An image can belong to multiple](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=175.40750000000008) [categories. Based on your requirements you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=178.01142857142852) [can choose enable this or not, I'm going](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=179.79745454545449) [to leave this unchecked, we don't really](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=181.97727272727275) [need it. Go ahead and click on CREATE](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=183.68272727272733) [DATASET and start importing the data into your AutoML Vision API.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=2&mode=live&start=186.21600000000004)

[Training and Evaluating the Image Classifier](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live)

[Let's explore the training data that we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=0) [just uploaded to our dataset. You can see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=3.88) [that we have a total of about 38, 000](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=5.576571428571431) [images and all of these images are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=7.9789090909090925) [labeled, there are no unlabeled images.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=10.615363636363636) [You can see all of the image labels here,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=12.628923076923074) [there's an entire list, there are 75](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=15.735444444444443) [categories. For each of these categories](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=19.147555555555563) [on screen you can see that there are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=20.665384615384625) [between 450 and 500 images per label. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=22.314) [again, as we upload a training data that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=26.034)[was a warning, duplicate files were](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=29.3619) [detected, I'll take a look at the details](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=31.367699999999992) [here, there are some duplicate files in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=33.33946153846154) [our training data, I'm going to go ahead](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=35.106500000000004) [and ignore those. We'll now click on the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=38.01450000000002) [TRAIN tab here to start the training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=40.36269230769229) [process. You can immediately see that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=42.123461538461505) [AutoML has given us the go ahead, we have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=44.06999999999999) [enough images to start training. You can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=47.04361538461538) [scroll down here and click on the START](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=49.14576923076921) [TRAINING button. This will pop up a dialog](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=51.596538461538465)[that will allow you to name your model,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=54.09561538461539) [make sure you associate a version number](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=56.28938461538461) [with your model, and specify how long you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=58.21076923076923) [want to train based on your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=60.680923076923065) [budget. This is an option that is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=62.76984615384615) [available in the Vision API, this is not](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=64.76215384615384) [true for others. You can train for 1 hour,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=67.15599999999998) [24 hours, or specify a custom period.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=69.928) [AutoML gives us the first hour of training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=72.48730769230767) [for 10 models per month free. I'm just](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=75.23142857142857) [going to go with the 1 compute hour](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=77.43314285714284) [choice. There's a summary of your data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=79.8312307692308) [that you can see on your screen, there are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=82.10138461538469) [38, 000 labeled images, 75 labels, click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=85.55053846153847) [on the START TRAINING button to begin. You](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=88.27687499999999) [specified a time limit for your training](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=90.894) [process, it'll complete with an hour, and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=93.246) [once training has completed you can click](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=95.701) [on the TRAIN button and see the results of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=98.08883333333333) [your model, you can evaluate your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=100.50833333333333) [classifier. And you can see that on this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=102.16699999999999) [training data our model performed](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=104.409)[extremely well, both precision, as well as](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=106.55566666666667) [recall values are very high, or 99%. Just](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=109.53600000000002) [like with the text classification model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=112.74523076923077) [you can click on SEE FULL EVALUATION and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=114.31861538461538) [see additional metrics. You can also](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=116.6650909090909) [adjust your Score threshold to tweak the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=118.98436363636364) [position and recall values that work for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=121.95400000000001) [you. If you scroll down you can see that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=125.12150000000001) [precision and recall curves for this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=127.34076923076923) [model, you can scroll down further and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=128.82557142857144) [view the confusion matrix as well. You can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=131.48957142857154)[see that this model has worked really well](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=134.2397692307692) [with our training data, it's only cherries](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=136.10684615384608) [that have been misclassified, all of the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=138.0379090909091) [other fruits have been classified correctly.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=3&mode=live&start=140.192)

[Image Classification Using the UI](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live)

[Now that we have a trained custom model we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=1.843) [can use it for prediction. Head over to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=3.755499999999999) [the PREDICT tab and let's see if we can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=5.4688) [take our model for a drive run. You can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=7.421200000000001) [test your model on new images by simply](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=9.64914285714286) [uploading it to the UI here, or you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=11.752) [have your model predict on your image by](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=14.754142857142854)[using the REST API, or you can choose to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=17.225400000000004) [use the PYTHON client if you want to use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=19.635600000000014) [the programmatic client libraries to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=23.16899999999999) [preform prediction. We'll first try out](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=25.44399999999998) [this model by uploading images to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=27.534000000000006) [AutoML UI, this will bring up an Explorer](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=29.599000000000018) [window. You can choose any of the images](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=31.658076923076926) [from you test dataset, I'm going to choose](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=33.694714285714284) [an image of an apricot. I'll just choose](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=36.27642857142855) [any image at random here and go ahead and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=38.80157142857142) [upload it. And once upload is complete you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=41.53628571428568) [can see the prediction off to your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=44.17457142857143) [top-right. With a confidence of 1 our](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=46.54357142857144) [model has classified this as an apricot.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=49.02861538461537) [Let's try this model with another image](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=51.533) [from our test dataset, I'm going to upload](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=53.583999999999996) [it from my local machine, this time I'm](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=55.642571428571415) [going to choose an image of a banana. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=57.415714285714245)[this image has been uploaded you can see](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=60.079076923076904) [that our model is 99. 7% sure that this is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=62.82986666666666) [indeed a banana. Let's try something a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=67.06920000000002) [little different for our third image.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=69.58579999999999) [We'll upload an image which has multiple](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=71.453) [fruits within it. Under the fruits-360](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=74.16340000000005) [folder there should be a folder that says](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=76.31036363636365) [test-multiple\_fruits. And here is the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=78.938) [image that we're going to pass in for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=80.71254545454545) [prediction. Remember something when we](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=83.42509090909091) [trained our model here, we hadn't enabled](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=84.8828181818182) [our model for multi-label prediction. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=87.83474999999999) [training process is different if you want](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=91.11622222222223) [multi-label classification, let's see what](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=93.25277777777782) [our model does with this image. Our model](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=95.26080000000002) [has classified this image to be that of an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=98.362) [apple. The confidence score is really low](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=100.82349999999998) [though, it's just 60. 8%. That is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=103.18936363636364)[pomegranate and there is an apple in this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=105.803) [image, it's chosen to label that it thinks](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=108.12299999999993) [is the most likely. If you want](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=110.86363636363636) [multi-label classification done right you](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=113.3660909090909) [need to enable that checkbox during the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=115.20290909090907) [training process. Your training data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=118.03699999999998) [should also contain images that belong to multiple categories.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=4&mode=live&start=121.903)

[Image Classification Using the REST API and Python Client](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live)

[Let's now see how we can use the REST API,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=2.073) [as well as the Python client for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=4.250333333333334) [prediction, we'll activate Cloud Shell](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=5.984636363636364) [first and create a new directory called](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=7.598727272727272) [image\_data. We'll cd into that directory,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=10.364333333333336) [here is where we hold the image file that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=13.313) [we pass into our model for prediction.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=16.254874999999995) [Click on the three-dot menu at the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=18.543) [top-right of your Cloud Shell, This will](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=20.291833333333344) [give you the option to upload a file from](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=22.080857142857145) [your local machine onto the Cloud Shell](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=24.510214285714294) [home directory. I'm going to choose one of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=26.60584615384615) [the test images at random, an image of an](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=29.177538461538454) [apricot from within the test folder. Once](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=33.084714285714284) [this file has been uploaded to the Cloud](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=36.02961538461538) [Shell home directory I'm going to move](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=38.07453846153844) [this image over to the image\_data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=40.26485714285714) [directory that I just created. This is a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=42.60057142857141) [simple cp command. The image that I'm](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=45.36814285714285) [going to use for prediction is now](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=47.28414285714284) [available in the image data directory. Now](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=49.57899999999999) [you can send this image directly to the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=52.375375)[API, you have to base64 encode it. Simply](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=55.54637499999999) [call base64 in your Cloud Shell VM, pass](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=58.71115384615384) [in the JPEG image, and save the output to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=61.83238461538459) [a text file, output. txt. If you open up](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=65.62449999999998) [output. txt with the Nano editor you'll be](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=68.80426666666665) [able to see the base64-encoded data. We'll](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=70.70079999999996) [now create a JSON file that will hold the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=73.17499999999998)[body of our request, I'm going to call it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=77.03458333333333) [image. json, and within that you add in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=80.03683333333336) [the JSON structure of the payload, which](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=82.21899999999998) [you can get form the AutoML Vision page.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=84.05311111111111) [The payload takes in a field called](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=86.606) [imageBytes, specify the image in the byte](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=88.9183333333333) [format, this is the base64-encoded format](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=91.29616666666666) [that you can copy over to this JSON file.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=93.47466666666668) [Use Ctrl+X to save this file, copy over](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=96.9362857142857) [your JSON file that contains your service](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=100.15114285714282) [account credentials to the current working](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=102.69320000000002) [directory, that is the image\_data](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=104.94650000000001) [directory, and set up the environment](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=107.01275000000004) [variable. GOOGLE\_APPLICATION\_CREDENTIALS](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=110.46314285714286) [pointed to the JSON file that contains](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=111.678) [your service account credentials. You can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=114.42645454545459) [copy over the curl command to hit this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=116.461) [REST API from the AutoML Vision page. The](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=118.317) [body for this curl request is present in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=120.84366666666665) [image. json, which contains our image in](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=124.041) [the base64 encoded format. And here is the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=127.53527272727277) [response from our model, our model is 99%](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=130.85028571428572) [sure that the image is that of an apricot.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=133.48685714285713) [We'll now predict using a Python client,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=136.47215384615384) [which we'll write in the predict. py file.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=138.8738888888889) [Copy the code over from the AutoML Vision](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=142.137) [page for our model, all of the code for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=144.83700000000005) [predict. py is available here, and paste](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=147.37450000000007) [it into your predict. py that you've](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=149.03700000000015) [created in Cloud Shell. One advantage of](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=151.99422222222225) [using this Python prediction client is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=154.7921818181818) [that it converts the image to a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=156.41654545454543) [byte-encoded format for you. You simply](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=159.05522222222226) [pass in the image, your current project](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=161.49014285714287) [ID, and your model ID. And here it is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=164.1401428571429) [again, our model is 99% sure that this image is that of an apricot.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=5&mode=live&start=170.033)

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[And this brings us to the very end of this](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=2.18) [module where we used AutoML for image](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=4.6113333333333335) [analysis. AutoML Vision allows us to build](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=6.634166666666667) [our own custom models that have been](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=9.459250000000003) [trained on our dataset. The Vision API](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=12.155) [works very well for image classification](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=14.726272727272729) [problems and it has been explicitly](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=16.898818181818186)[optimized for real-world photographs, so](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=19.496999999999996) [if you try it with hand-written digits or](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=21.651923076923076) [other kinds of images such as x-rays it](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=23.899307692307694) [may not work so well. You can perform](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=26.343307692307693) [multi-label classification as well.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=28.98392307692308) [Several file formats are supported for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=30.465400000000002) [your training data, as well as for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=32.76820000000001) [prediction data. 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And this brings us to](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=44.22400000000003) [the very end of this course where we use](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=46.71533333333335) [AutoML to build our own custom models with](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=49.127933333333374) [absolutely no knowledge of machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=52.320923076923094) [learning. AutoML democratizes AI and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=54.410153846153875) [machine learning, you can harness the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=56.387636363636375) [power of ML without having to build your](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=58.72709090909093) [own model. Before we end this course, a](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=62.09822222222224) [quick reminder for all you. If you have](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=64.51818181818182) [any datasets or models stored in AutoML](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=66.63264285714286) [you might want to clean them up so that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=68.51714285714284) [you don't incur any additional charges. If](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=71.27445454545456)[you're interested in other GCP](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=73.56174999999999) [technologies, specifically focused on](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=75.15466666666666) [machine learning and big data, here are](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=76.71599999999998) [some courses on Pluralsight that you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=79.17599999999999) [watch. Designing and Implementing](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=81.43174999999997) [Solutions Using Google Machine Learning](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=83.10324999999999) [APIs will expose you to Cloud ML APIs,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=85.352) [these are pre-trained models. If you're](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=89.18466666666669) [interested in big data processing on the](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=91.6856) [GCP, Architecting Big Data Solutions Using](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=93.73169999999998) [Google Dataproc will show you how you can](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=96.20899999999999)[use managed Hadoop on the Google Cloud. If](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=99.58529999999999) [you're a student of machine learning and](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=102.59407142857143) [you want to learn how to build your own](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=104.19757142857144) [models, but don't know how to get started,](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=106.30263636363637) [here are some courses on Pluralsight that](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=108.251) [can help you. Understanding Machine](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=110.19350000000003) [Learning with Python is a great course for](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=111.78981818181818) [beginners. Another course that you might](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=114.8450909090909) [be interested in, a beginner course, is](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=116.40290909090908) [Building Machine Learning Models in Python](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=118.31022222222222) [with scikit-learn. And that's it from me](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=121.2875555555556) [here today, goodbye and thank you for listening.](https://app.pluralsight.com/player?course=google-cloud-automl-designing-implementing-solutions&author=janani-ravi&name=730d094c-095c-4fcc-9da6-8cba441d4385&clip=6&mode=live&start=127.28)