**GCP - NOTES**

Manual data analysis is very important. Don’t jump straight into ML.

-a lot of value is on the path to ML

-It helps you fail fast.

-Can tell you if there are insights to be had from the data.

-to build a good ML model. You have to know your data.

To genuinely understand data, you have to get your hands dirty (by practicing technical data-handling skills).

-if you have a standard problem, then automation is efficient in that you can using pre-trained models -automation also allows you to effectively scale (data preparation, modeling different algorithms) from manual data analysis on small dataset to scaling to larger datasets.

-Unstructured data accounts for 90% of enterprise/organization data.

-you don’t have to start with unstructured data.

-process the unstructured data (through an ML API into entities/features that you can build a simple ML model out of), then take the results as the input to your custom ML model.

Use ML creatively to delight your users. (to be personalized)

For ML to be “magic” keep in mind the word delight. Delight your users. Anticipate their next need.

With ML, you can infuse you apps with intelligence

Use case: people want background music in their videos but using popular songs is a copyright violation. ML can generate/create music according to specs.

(\*SHOW YouTube video of generated music)

**Automated (friendly) Machine Learning**

For **custom ML models** you can use Scikit-learn or TensorFlow.

**Automated ML**

-let’s individuals with limited ML experience train high-quality domain-specific models.

May involve:

1. Data prep and cleansing routines
2. Creation of new features to be used in machine learning models
3. Selection of which parameters are to be used in the model
4. Model identification and selection
5. Hyperparameter tuning

Can require little to no code.

-an advantage is that you don’t have to worry about any infrastructure, any data collection or any training data. You don’t have to do the research.

There are great use cases for Auto ML in many organizations, but in most cases, it would not replace a skilled data scientist.

For most use cases, it would be extremely risky to deploy models without vetting and validation by a data scientist (skilled data professional).

Auto ML will augment the work of a data scientist, not replace it.

Auto ML can help you quickly identify which areas or projects might be most valuable for further exploration by a data scientist.

**Google**

**AI Building Blocks (AutoML and APIs)**

**CUSTOM MODELS** (AutoML) - uses transfer learning to build domain-specific custom models)

-let’s individuals with limited ML experience train high-quality domain-specific models.

**PRE-TRAINED MODELS (Cloud APIs)**

- for common use cases)

-you don’t have to worry about training models

-take advantage of Google’s expertise.

-you can immediately start using the proven pre-trained models.

A set of pre-trained (APIs) ML models (Vision, Speech, Translation, NLP, Video Intelligence)

**Video API**:

-tells you when a scene has changed

-items in video and their start and stop point

**Natural Language:**

- derive insights from unstructured text

-understand text

-extract entities from text

-detects sentiment

-classify content

**Speech API**:

Text to speech in over 100 languages.

* take an audio file and transcribe it into text.
* Start and end time of every word.
* profanity filtering.
* From the transcript, you can click and go to any word in the video

**Cloud Translation:**

-language detection

-translate text into over 100 different languages

**Vision API**:

-allows you to perform complex vision detection. Send it an image and it will perform image classification (**label detection**) on it using pre-defined labels (or custom labels).

-also provides **OCR**, extracts text from an image and can tell you what it says (in various language)

-**landmark detection** to tell you if an image contains a common landmark.

(You can try it out at: cloud.google.com/vision)

**ASK:** Who would be willing to share an idea that they have that could benefit from ML?

**BRAINSTORM** how you can use ML to replace some existing application or process in your organization.

-what are the benefits?

-what kinds of data would you need?

-are you collecting that data right now?

Apple and Amazon are amassing wealth and power, creating a new order in business where the most valuable resource is no longer oil, but data.

Tech companies are destroying the economy, creating a downturn in business where the most valuable resource is no longer available.