MACHINE LEARNING IN PPC

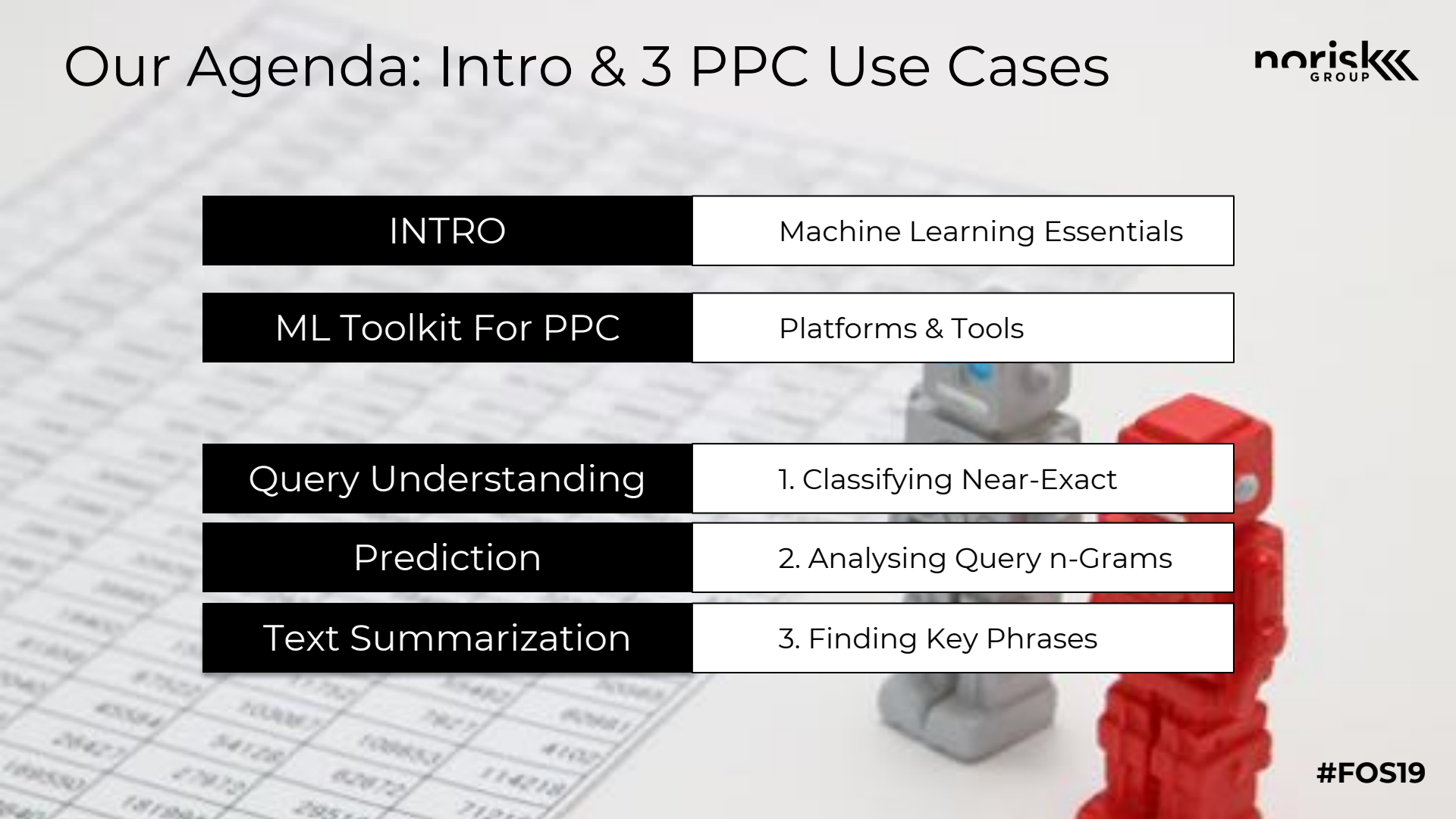
How To Get Started Today

Christopher Gutknecht | norisk Group | #FOS19

#FOS19

Our Agenda: Intro & 3 PPC Use Cases

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
Query Understanding	1. Classifying Near-Exact
Prediction	2. Analysing Query n-Grams
Text Summarization	3. Finding Key Phrases



Note: I’m not a Data Scientist - I’m a PPC

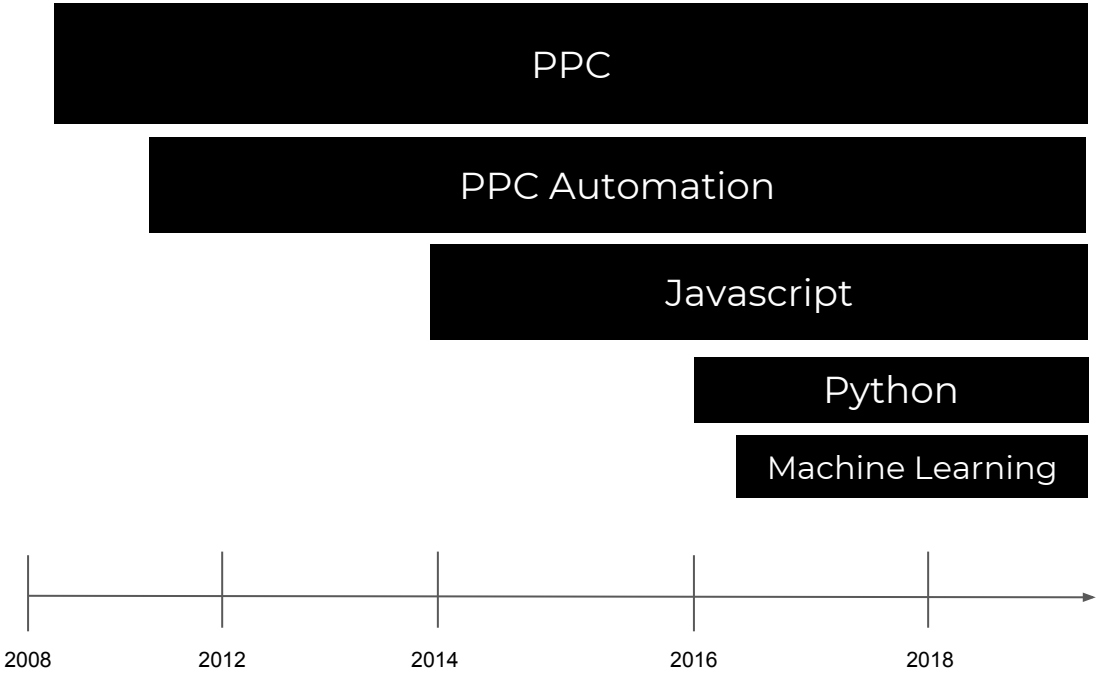
Christopher Gutknecht
Head of Online Marketing @ norisk

Munich-based

Focus Ecom & Retail

Self Taught Dev

Dad of 2,5 yr old



Think of Me As a Knowledgeable Tourist

Let’s Get Started with ML Essentials

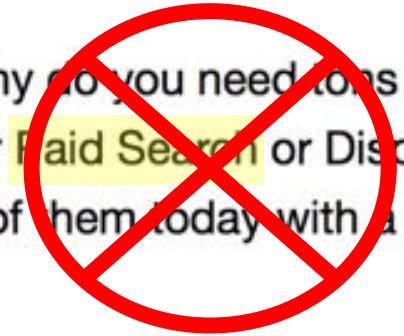
INTRO | Machine Learning Essentials

#FOS19

What Do We All Have in Common?

Data-Driven Nature Makes ML Relevant

Why do you need tons of people at your agency/company to manage your Paid Search or Display Campaigns, when you can replace almost all of them today with a system that leverages ML?



“ML-Worthy” PPC Automation Tasks

norisk GROUP

Query Understanding

- Typo Detection
- Entity recognition
- ...

Monitoring

- Anomaly detection
- Semantic inventory match
- ...

Text Generation

- Keyphrase extraction
- Text summarization
- ...

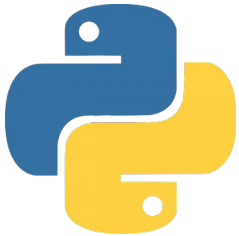
Start with the problem, **not** the solution. Make sure you aren't treating ML as a hammer for your problems.

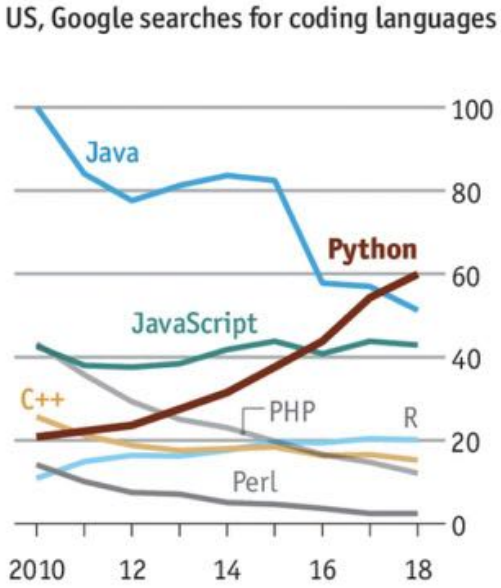
Let’s Get To Know our ML Starter Toolkit

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools

#FOS19

Python: Most Popular in 2018 and Dutch!





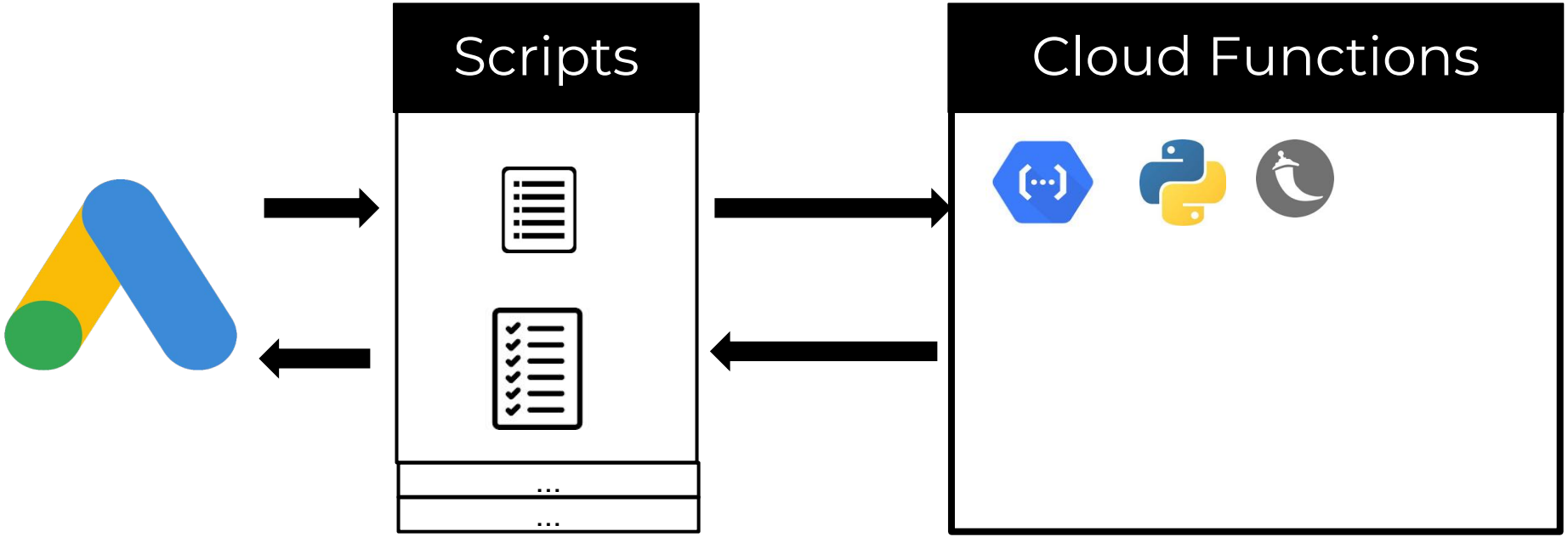
Guido van Rossum

Ads Scripts vs Python vs R?

norisk GROUP

	Ads Scripts	Python	R
Serverless	✓	(✓)	
Direct Ads API	✓		
Many Packages		✓	✓
General Purpose		✓	
Machine Learning		✓	✓

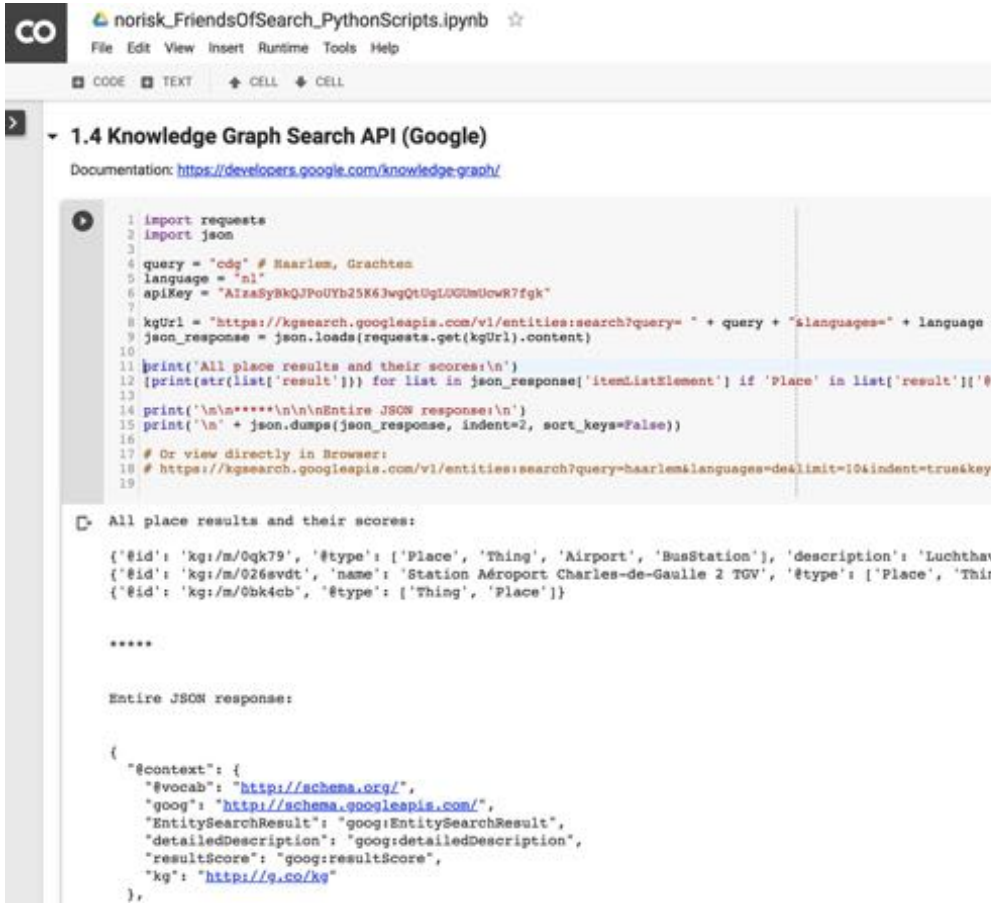
No Either-Or: Run Python From Scripts



Demo: bit.ly/norisk_python

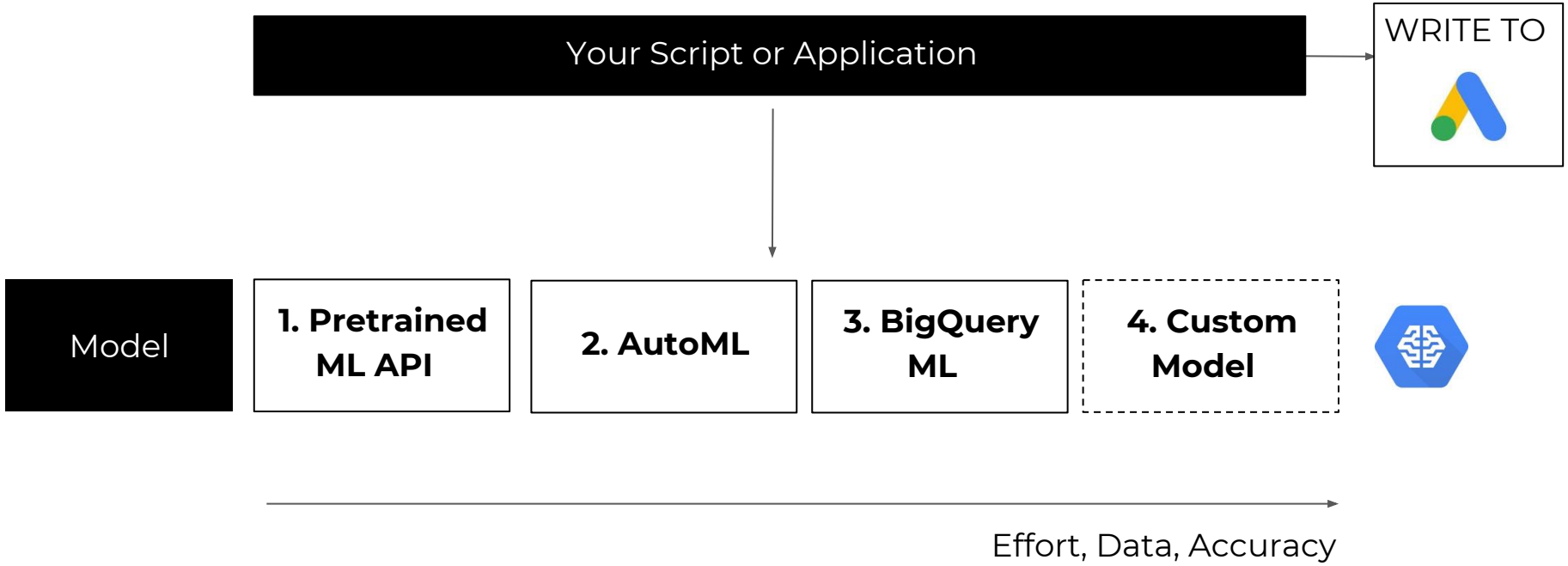
Colaboratory: Google-Sheets for Python

norisk GROUP



DEMO:
bit.ly/norisk_python

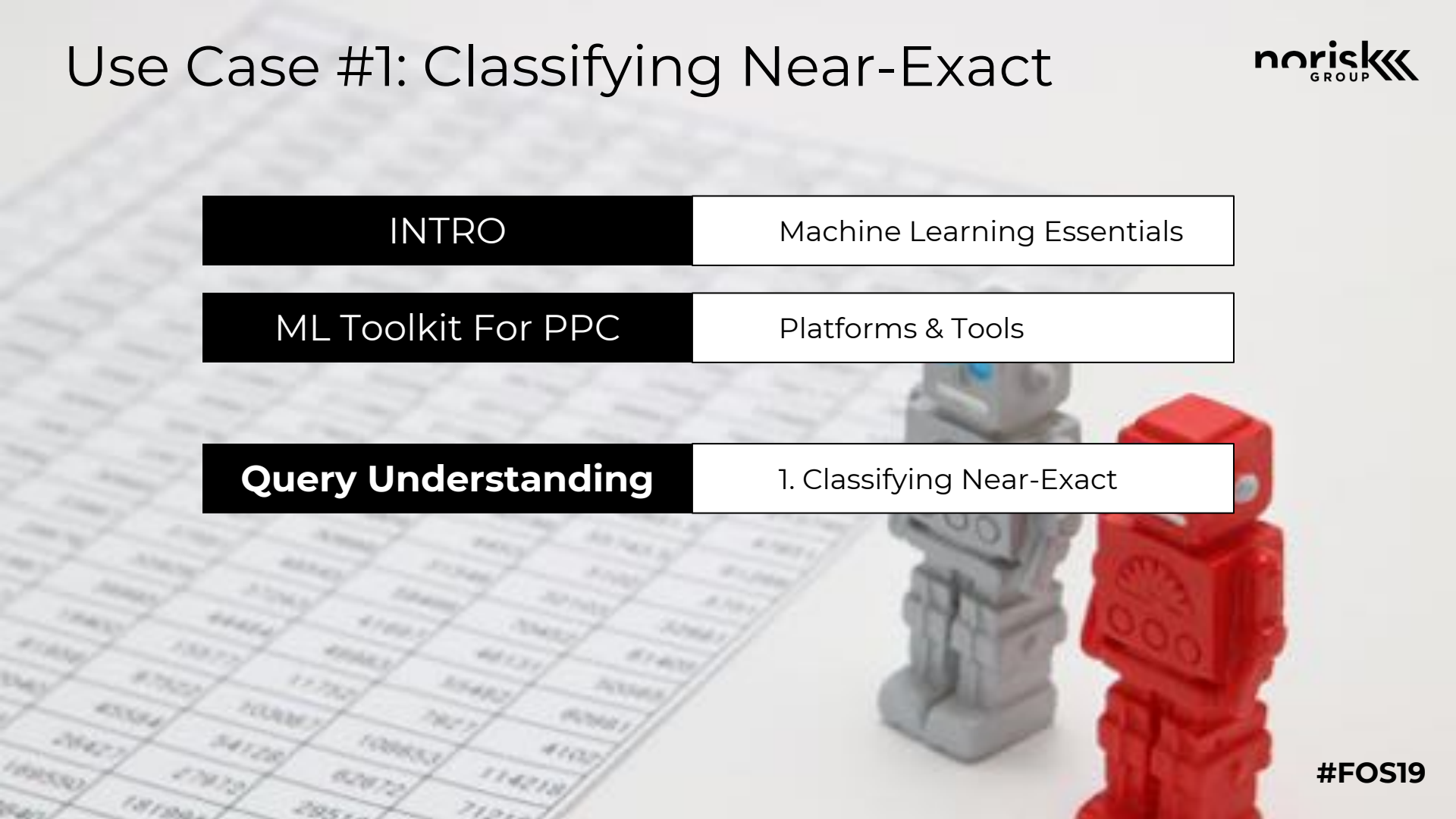
Three Simpler Options To Tie in ML



Source: [Lak Lakshaman - Medium]

Use Case #1: Classifying Near-Exact

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
Query Understanding	1. Classifying Near-Exact



Case #1: Classifying Near-Exact

Match the intent of a search with close variants

ONLY BLOCKING.

> What about **EXPANSION**?

Source: https://searchengineland.com/when-exact-match-isnt-exact-anymore-a-script-to-regain-control-307975

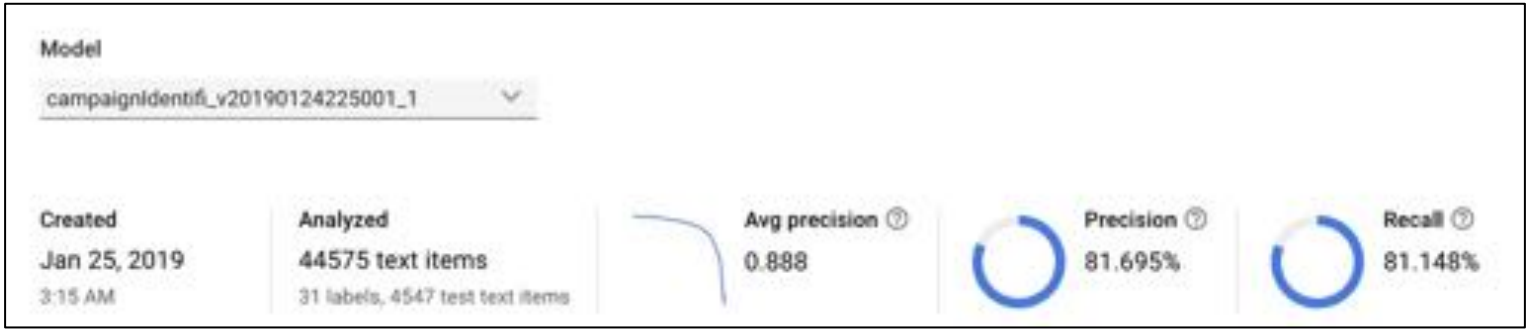
Classify Near Exact? Ask Google!

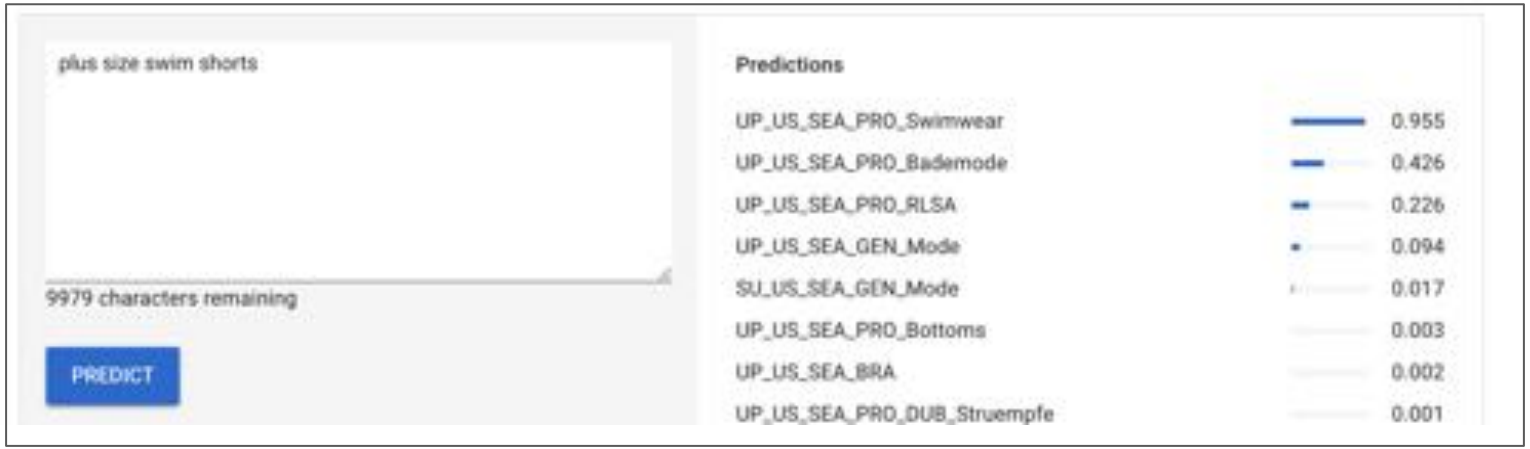
1. Suggest

2. Custom Search

Demo: bit.ly/norisk_python

Auto ML I: Model scores & Prediction





Auto ML II: Classifying Brand Campaigns

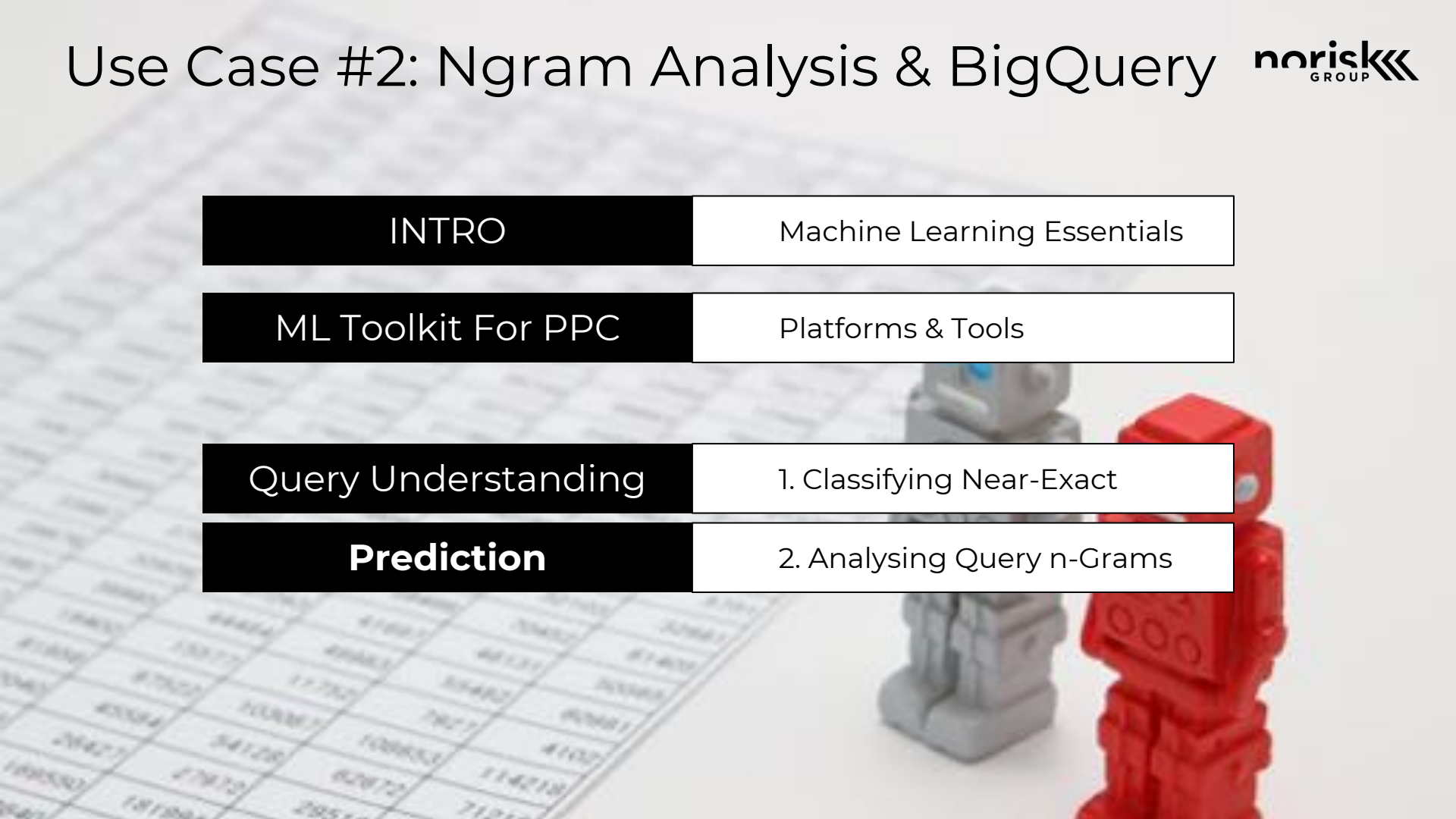
Confusion matrix

This table shows how often the model classified each label correctly (in blue), and which labels were most often confused for that label (in orange).

True label \ Predicted label	brand_Woolrich	brand_Dsquared2	brand_Windsor	brand_Herno	brand_Allude	brand_Caliban	G_Tracht_Designer	brand_Riani	brand_Moncler	brand_Parajumpers
brand_Woolrich	98.3%	1.2%	0.2%	-	-	-	-	-	0.3%	-
brand_Dsquared2	0.5%	99.2%	-	-	-	-	-	-	0.3%	-
brand_Windsor	0.7%	2.0%	96.6%	-	-	-	-	0.7%	-	-
brand_Herno	-	3.1%	-	94.4%	0.6%	-	-	-	1.9%	-
brand_Allude	-	1.9%	-	-	97.6%	-	-	0.5%	-	-
brand_Caliban	-	17.4%	-	-	-	82.6%	-	-	-	-
G_Tracht_Designer	0.7%	2.1%	-	-	-	-	94.4%	2.8%	-	-
brand_Riani	0.2%	0.2%	-	-	-	-	-	99.6%	-	-
brand_Moncler	0.7%	0.5%	-	-	-	-	-	0.2%	98.6%	-
brand_Parajumpers	1.3%	0.4%	-	-	-	-	-	-	-	98.2%

Use Case #2: Ngram Analysis & BigQuery

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
Query Understanding	1. Classifying Near-Exact
Prediction	2. Analysing Query n-Grams



Remember This? BigQuery Is Faster!

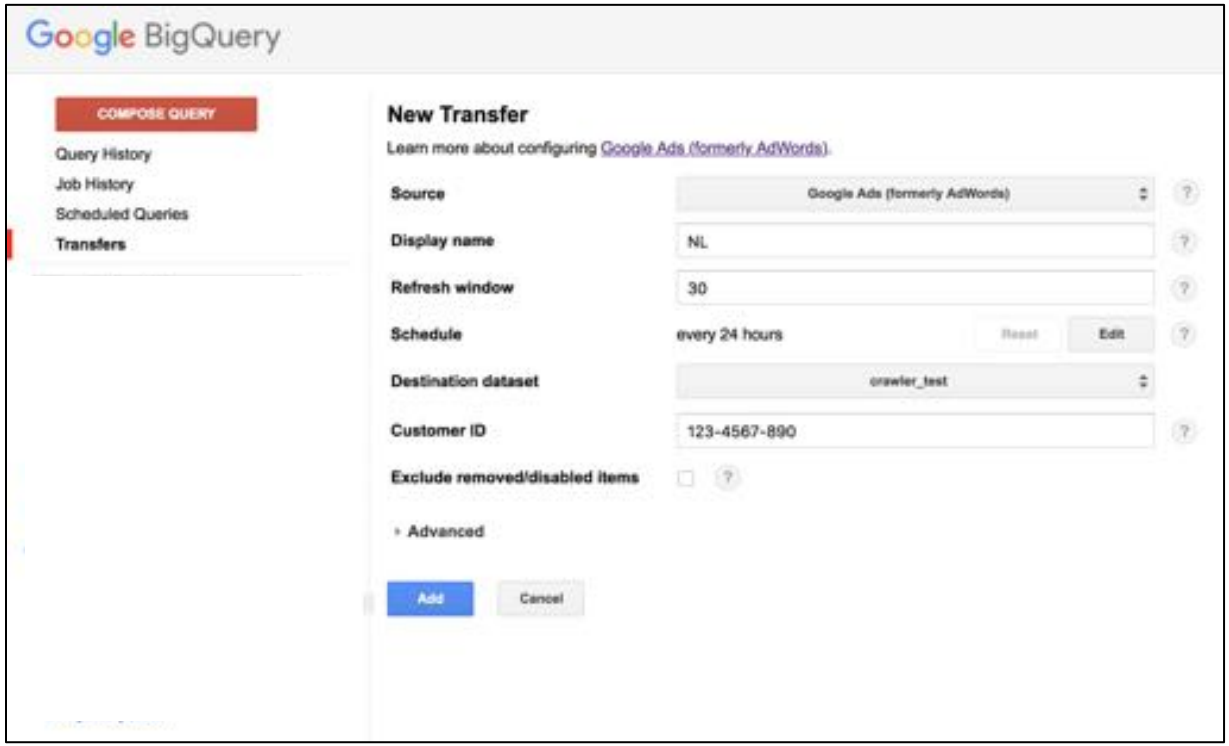
Search Engine Land

Ads Script: Find Your Best And Worst Search Queries Using N-Grams

Former Googler Daniel Gilbert of Brainlabs shares a script to help you identify wasted Ads spend using n-grams.

Daniel Gilbert on August 26, 2015

The Basis: Google Ads Data Transfer



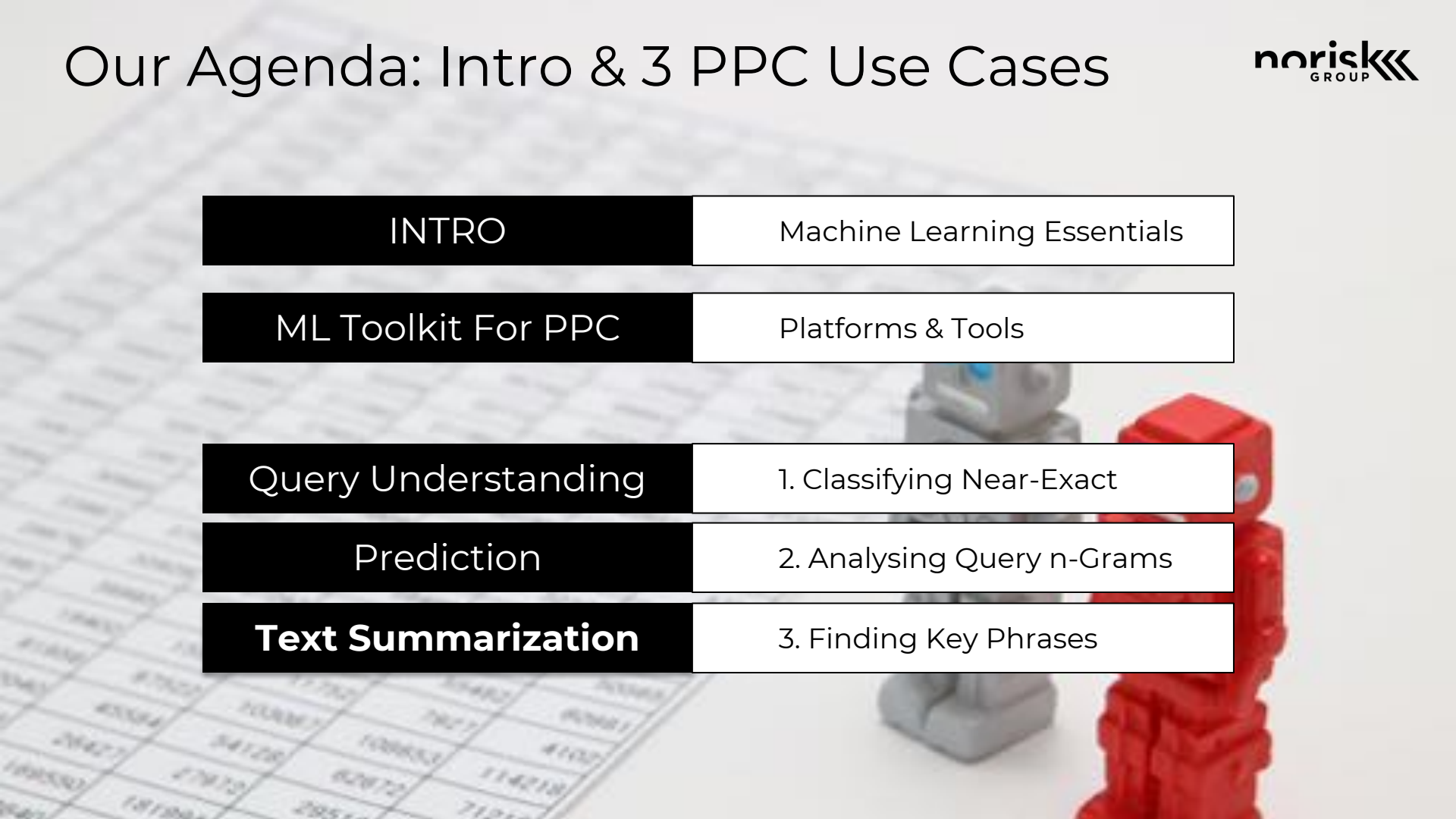
Tutorial: https://www.excelinppc.com/big-query-automation-powerhouse-for-google-ads/

BigQueryML: Train Models with SQL

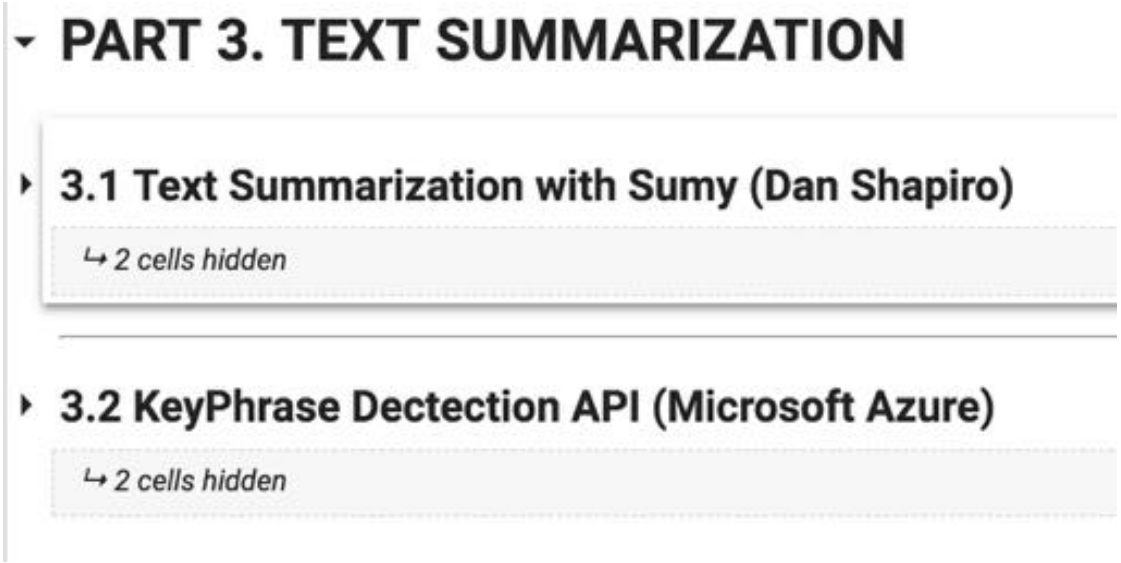
Demo: bit.ly/norisk_python

Our Agenda: Intro & 3 PPC Use Cases

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
Query Understanding	1. Classifying Near-Exact
Prediction	2. Analysing Query n-Grams
Text Summarization	3. Finding Key Phrases



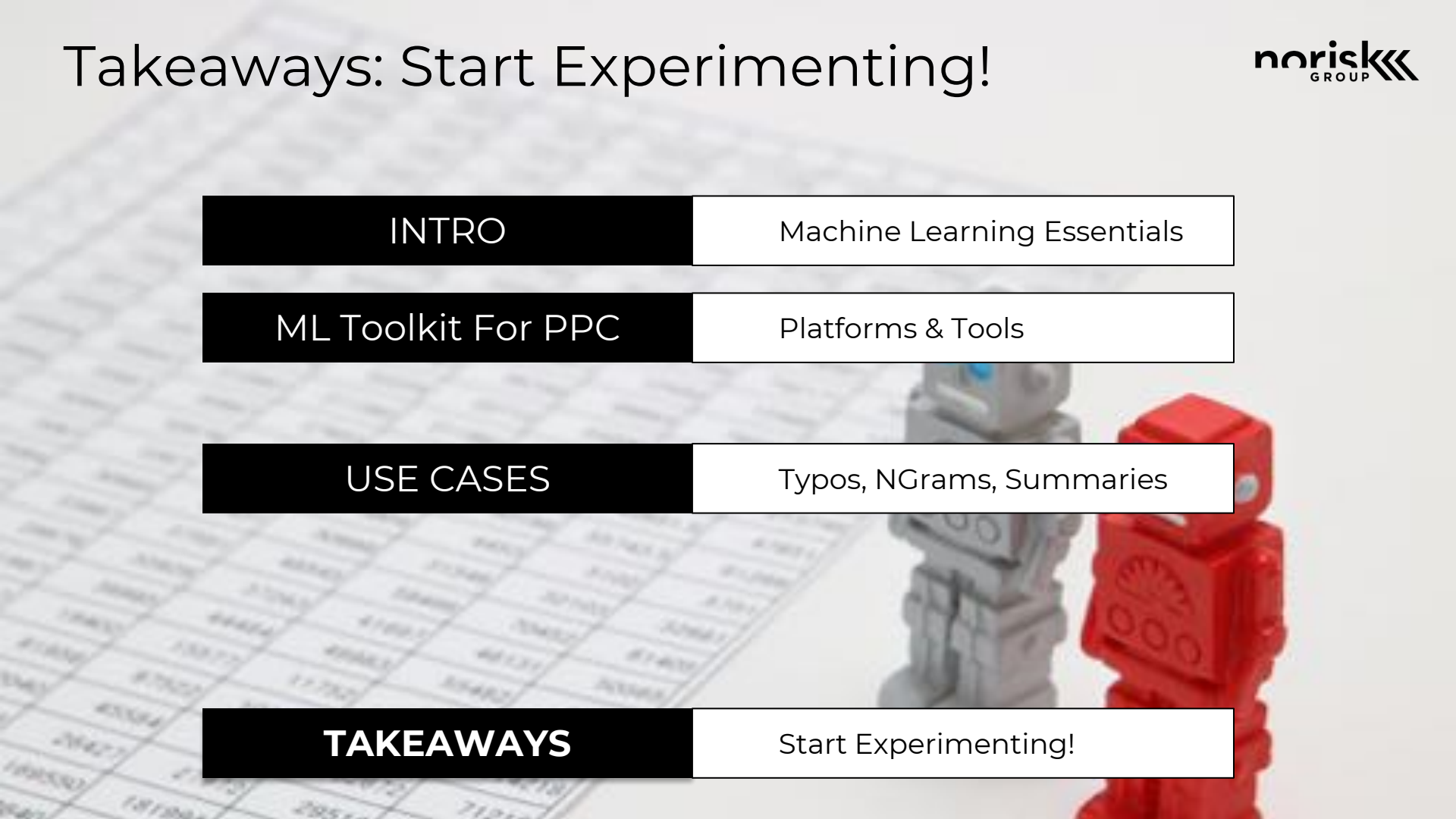
Text Summarization > see Demo



Demo: bit.ly/norisk_python

Takeaways: Start Experimenting!

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
USE CASES	Typos, NGrams, Summaries
TAKEAWAYS	Start Experimenting!



AI Is Coming ? Let’s be Jon Snow!

1. Listen to Your Team’s **problems**
2. Learn the Craft of **Tool Prototyping**
3. Leverage the **Cloud’s** Weapons
4. Be the **Architect** of Change

THANK YOU. Your Questions Please!

#FOS19

MACHINE LEARNING IN PPC

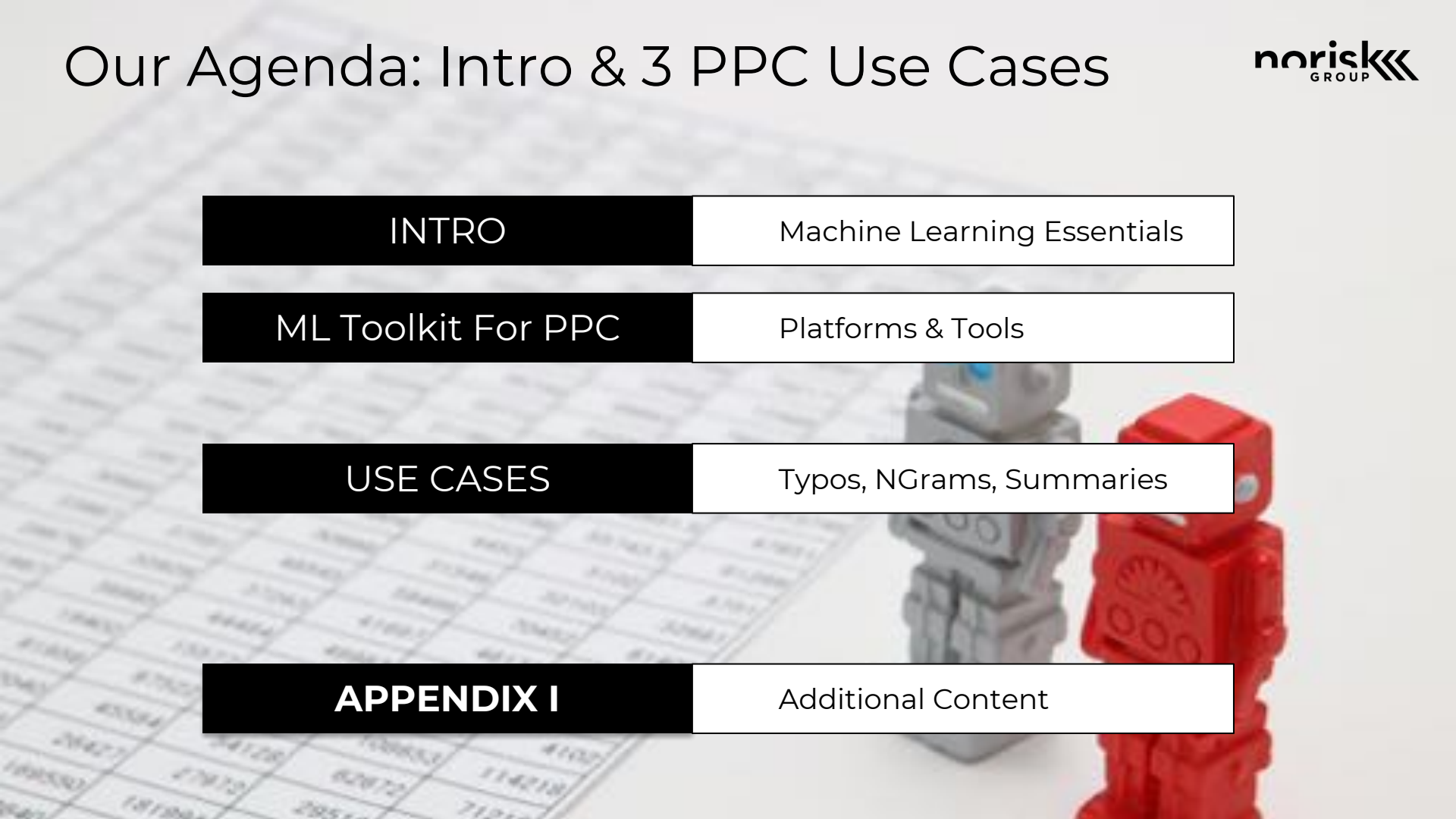
How To Get Started Today

Christopher Gutknecht | norisk Group | #FOS19

Bonus: GA Anomaly Detection for Slack

Our Agenda: Intro & 3 PPC Use Cases

INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
USE CASES	Typos, NGrams, Summaries
APPENDIX I	Additional Content

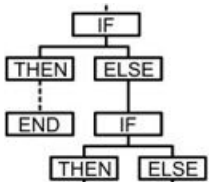


Rule #1: Not Every Problem Needs ML

norisk GROUP

RULE BASED

- Designed rule-flow
- **Outliers not included**
- Won't improve on data



MACHINE LEARNING

- Algorithmic model
- **Model learns from errors**
- Model constantly retrained

$$E = \sum_{i=1}^{N} (y_i - \hat{y}_i)^2$$

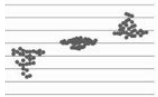
Rule-Based vs Machine Learning Code

Source: [Machine Learning 101 (Jason Myers, Google)]

Five Main Types of ML Algorithms

Unsupervised

Clustering



Dimension Reduction

Supervised

Classification

Regression

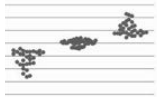
+ Reinforcement Learning

Natural Language Processing Is Its Own Game

norisk GROUP

Supervised ← → Unsupervised

Sentiment Analysis

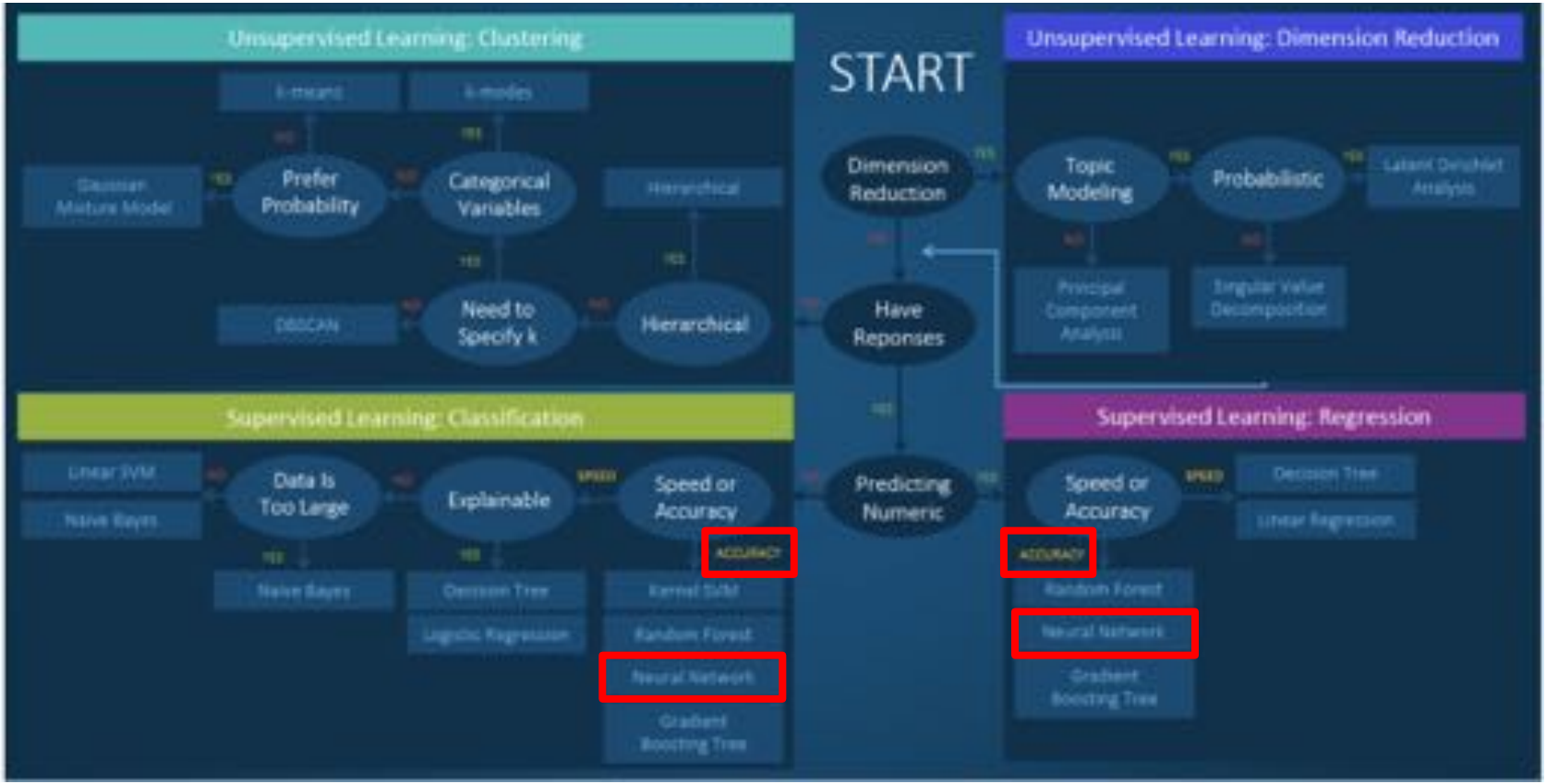


Topic Modelling

Entity Recognition

Sequence Prediction

And Deep Learning? Higher Accuracy!

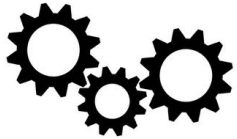


Source: https://blogs.sas.com/content/subconsciousmusings/2017/04/12/machine-learning-algorithm-use/#prettyPhoto/0/

Main Challenges for ML Approaches

norisk GROUP

Good Problem Framing	Access To Data	Knowledge of Solutions
• Finding value drivers • Defining relevant outputs	• Depth and Breadth • Cleanliness	• Choice of framework • References projects



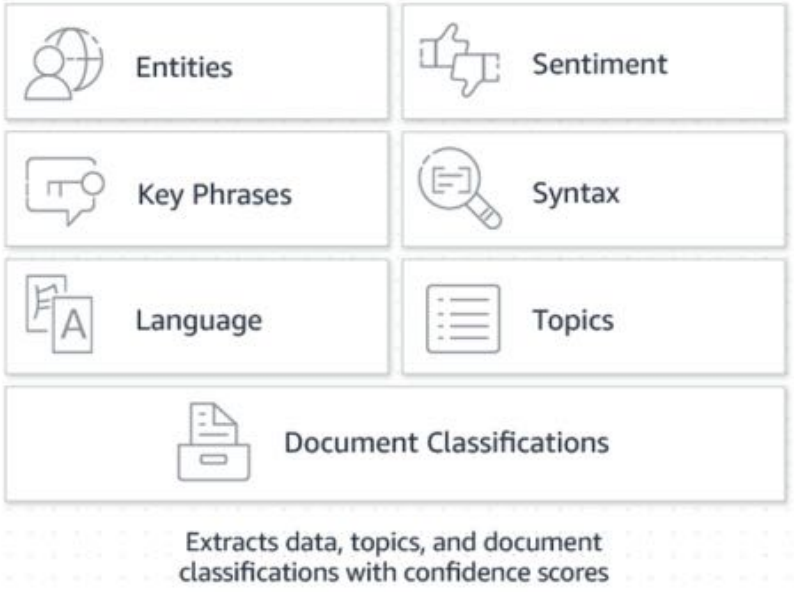
The 3 Cloud Platforms & their ML Tools

norisk GROUP

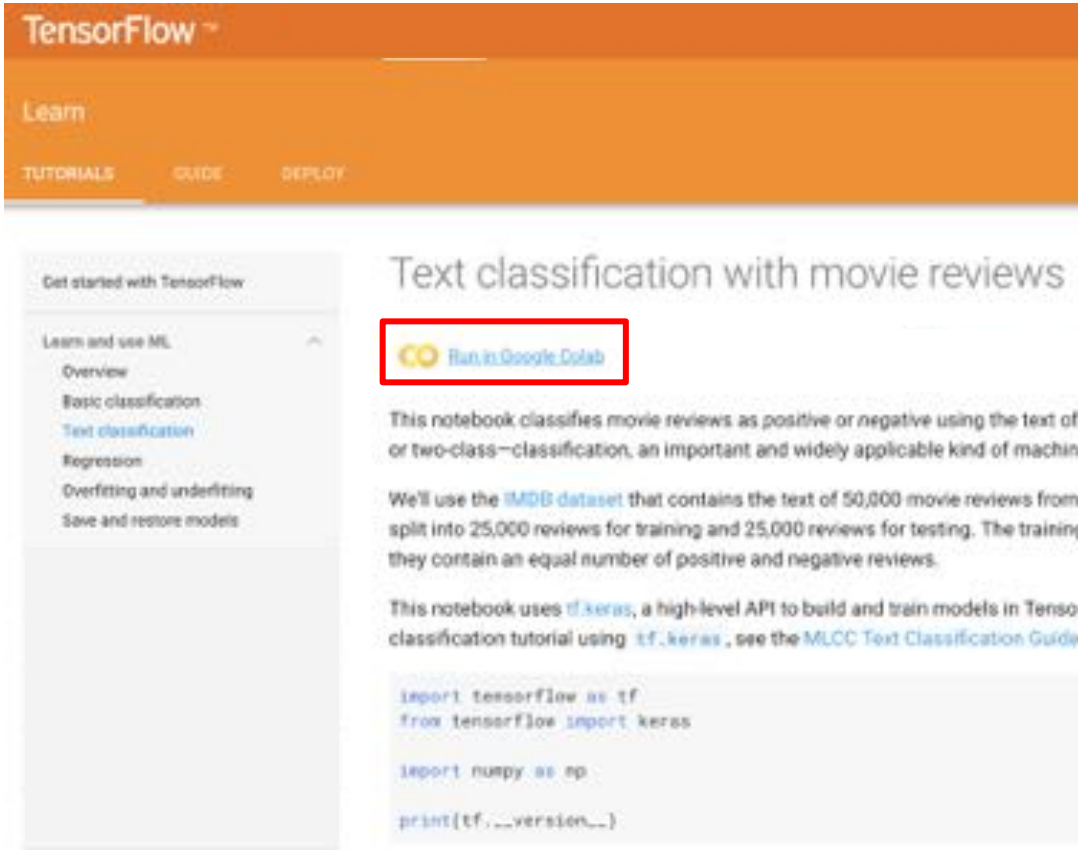
Google Cloud Platform	Amazon Web Services	Microsoft Azure
+ Google Integrations	+ Best DevOps Workflow	+ Windows & Bing maybe
• Managed **Storage** 	• “	• “
• Serverless **Execution** 	• “	• “
• Pretrained ML **APIs** 	• “	• “
• **AutoML** Service 	• “	• -

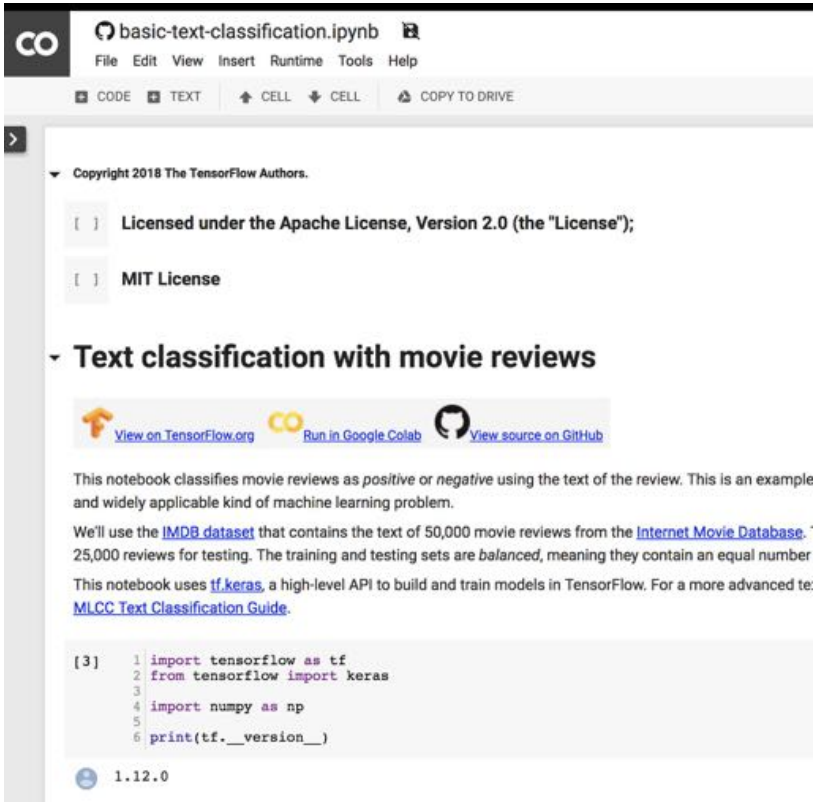
→ All similar. But Google has its benefits!

Pretrained APIs: Amazon Comprehend



Look out for Colab: Example TensorFlow





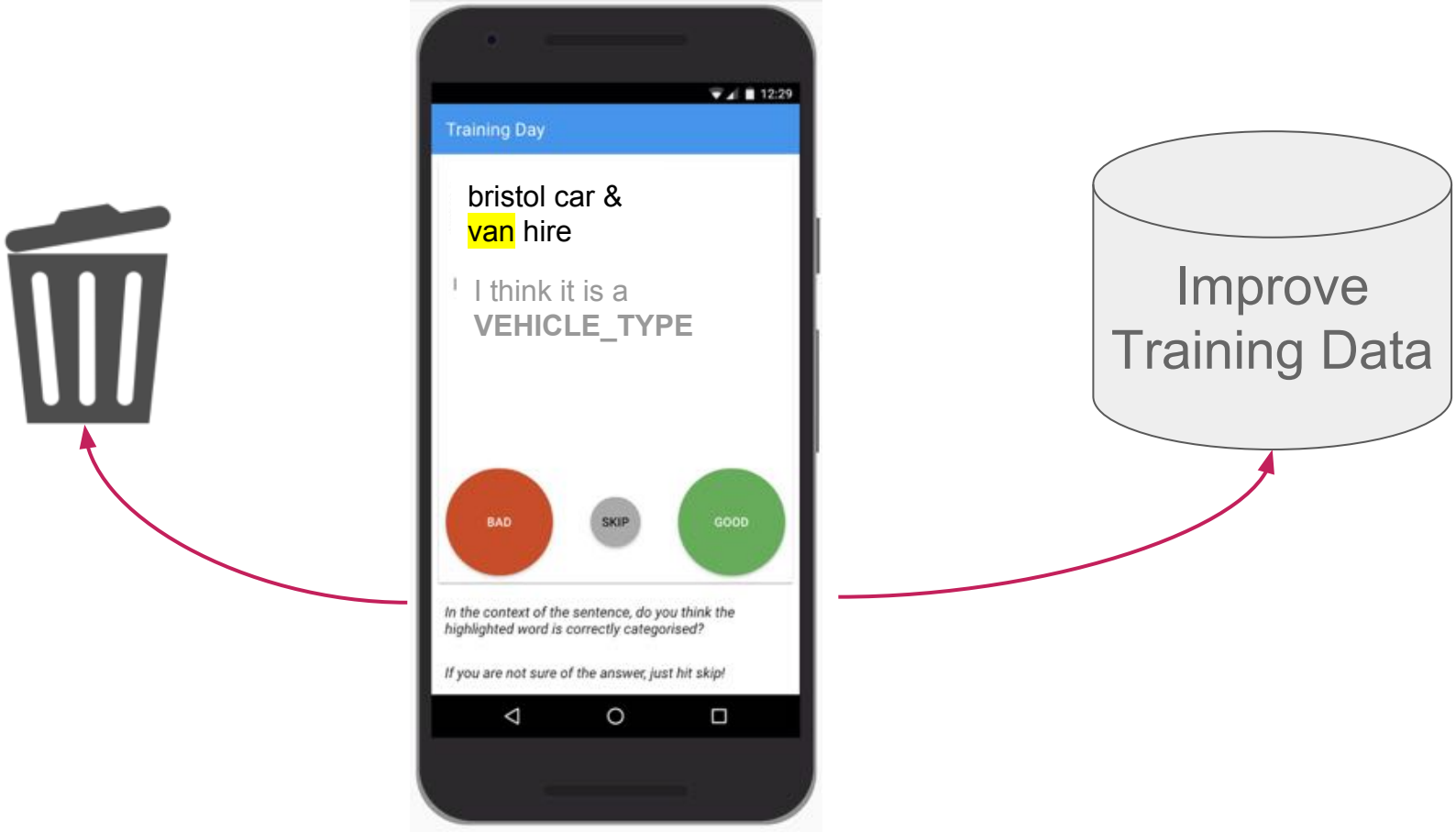
Popular Python NLP Packages

norisk GROUP

	String Similarity ≈	Language Model Aa	Context Modeling $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$
fuzzyWuzzy	✅		
spaCy	✅	✅	
gensim	✅		✅

Fuzzy Wuzzy Cloud Function Example:
https://colab.research.google.com/drive/1W6guxVZJqp-duQT6jSlmsqxkrCgt95Cl#scrollTo=a60zDUMiOEXD

Sixt: Query Disambiguation via App & Spacy

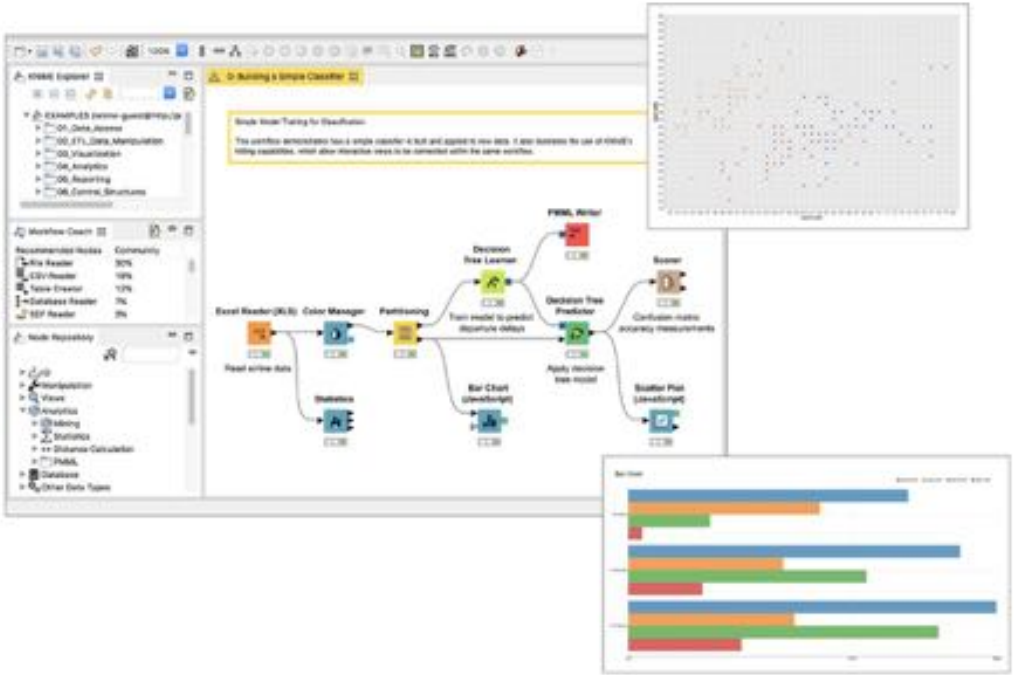


Don’t want write code? Try KNIME

Open for Innovation ®
KNIME

KNIME Analytics Platform

Open, intuitive, integrative data science.



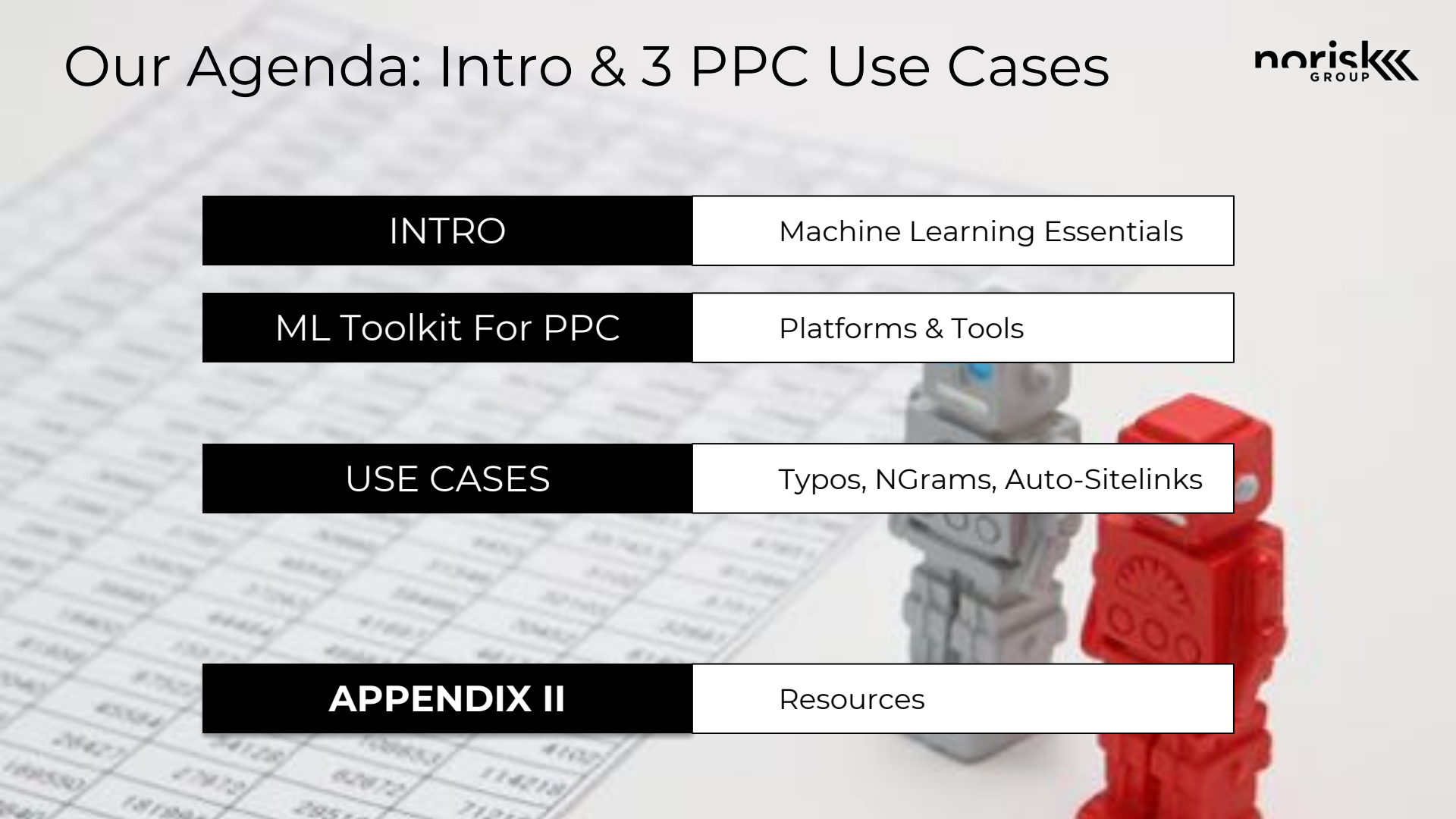
Querying Google Analytics in KNIME

Mon, 10/06/2014 - 00:00 — winter

The KNIME Google API extension (since version 2.10) allows for the connection and interaction of KNIME with Google APIs. For now nodes are provided to request and load data from Google Analytics.

Our Agenda: Intro & 3 PPC Use Cases

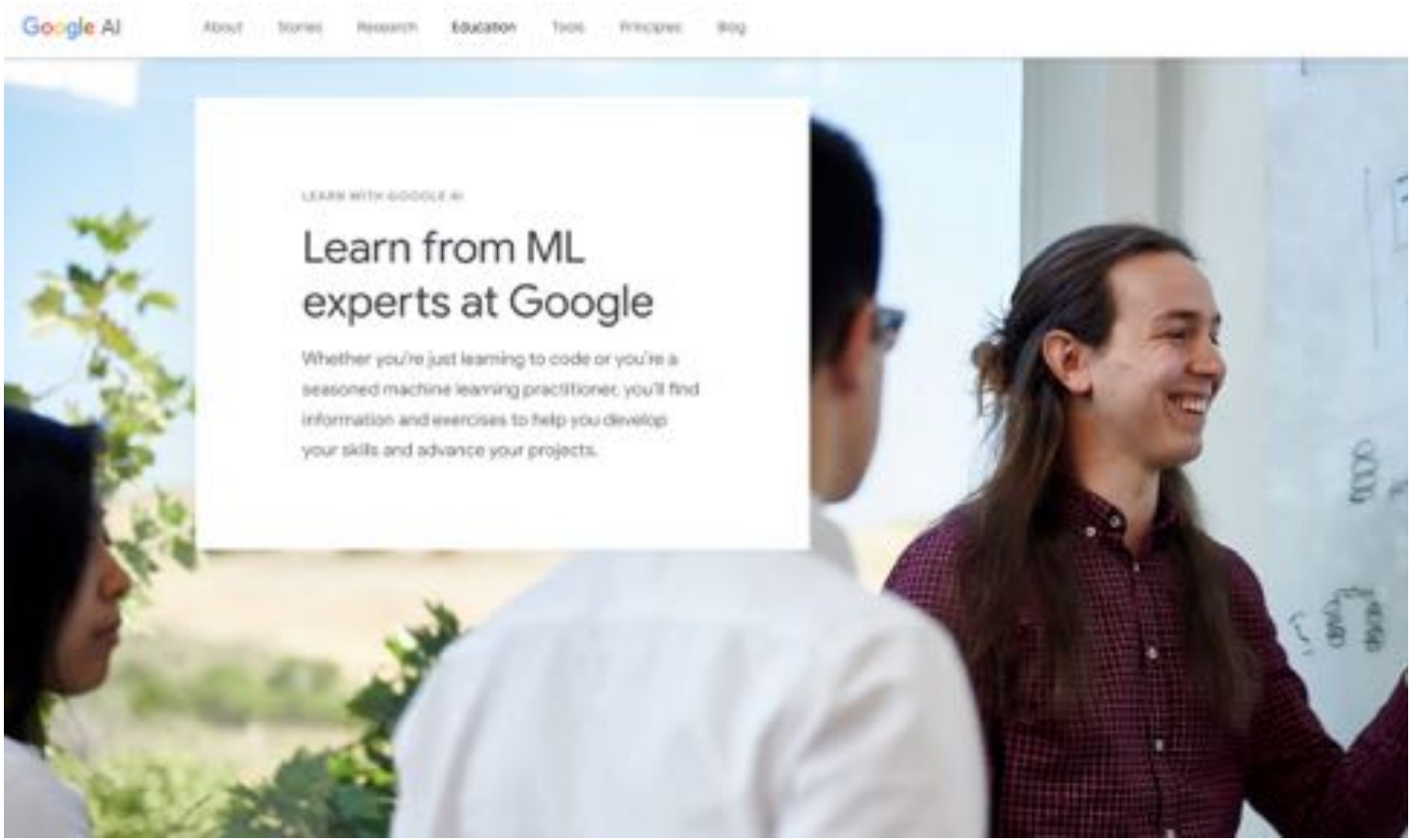
INTRO	Machine Learning Essentials
ML Toolkit For PPC	Platforms & Tools
USE CASES	Typos, NGrams, Auto-Sitelinks
APPENDIX II	Resources



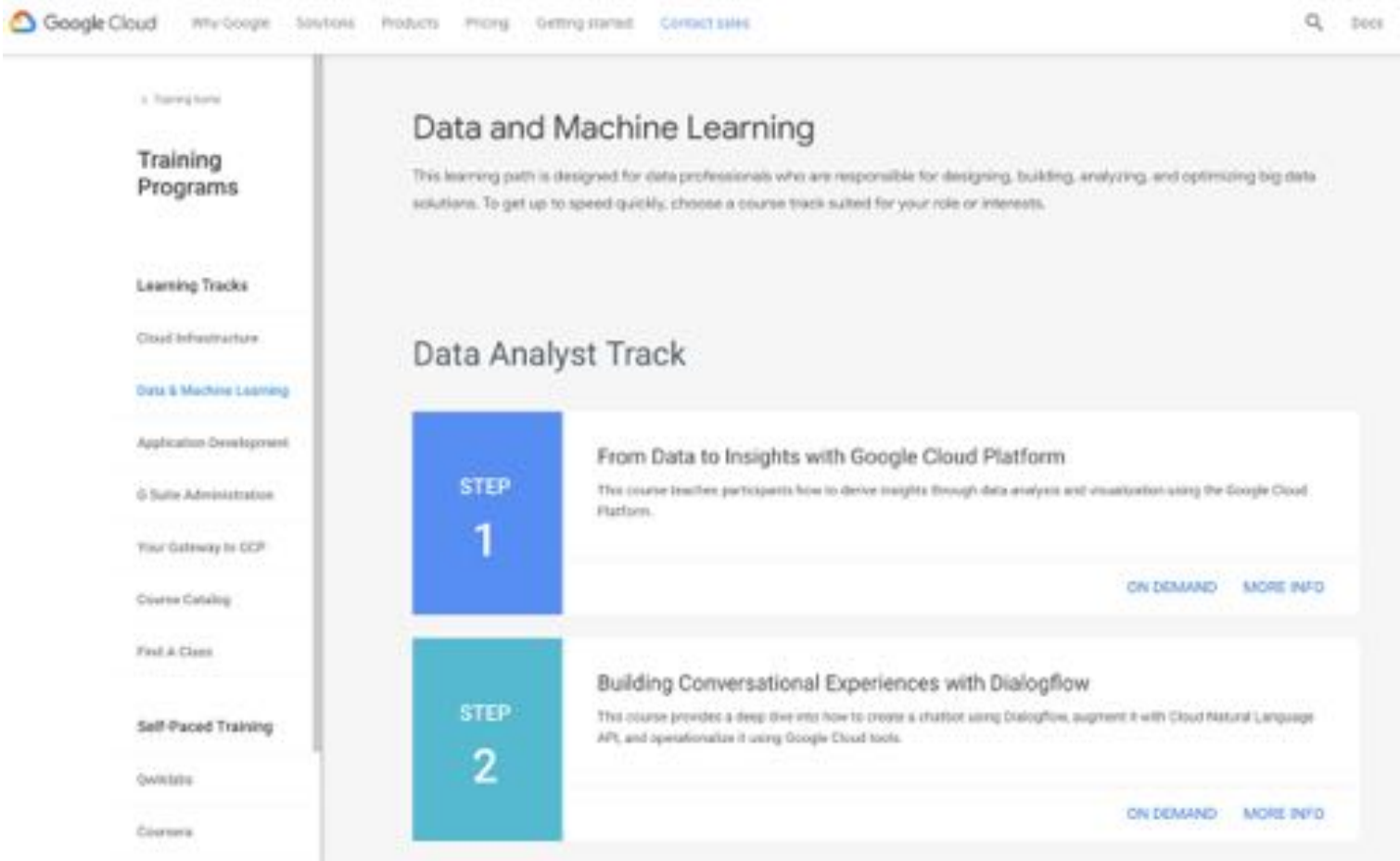
Resources: Google ML Crash Course

developers.google.com/machine-learning/crash-course/

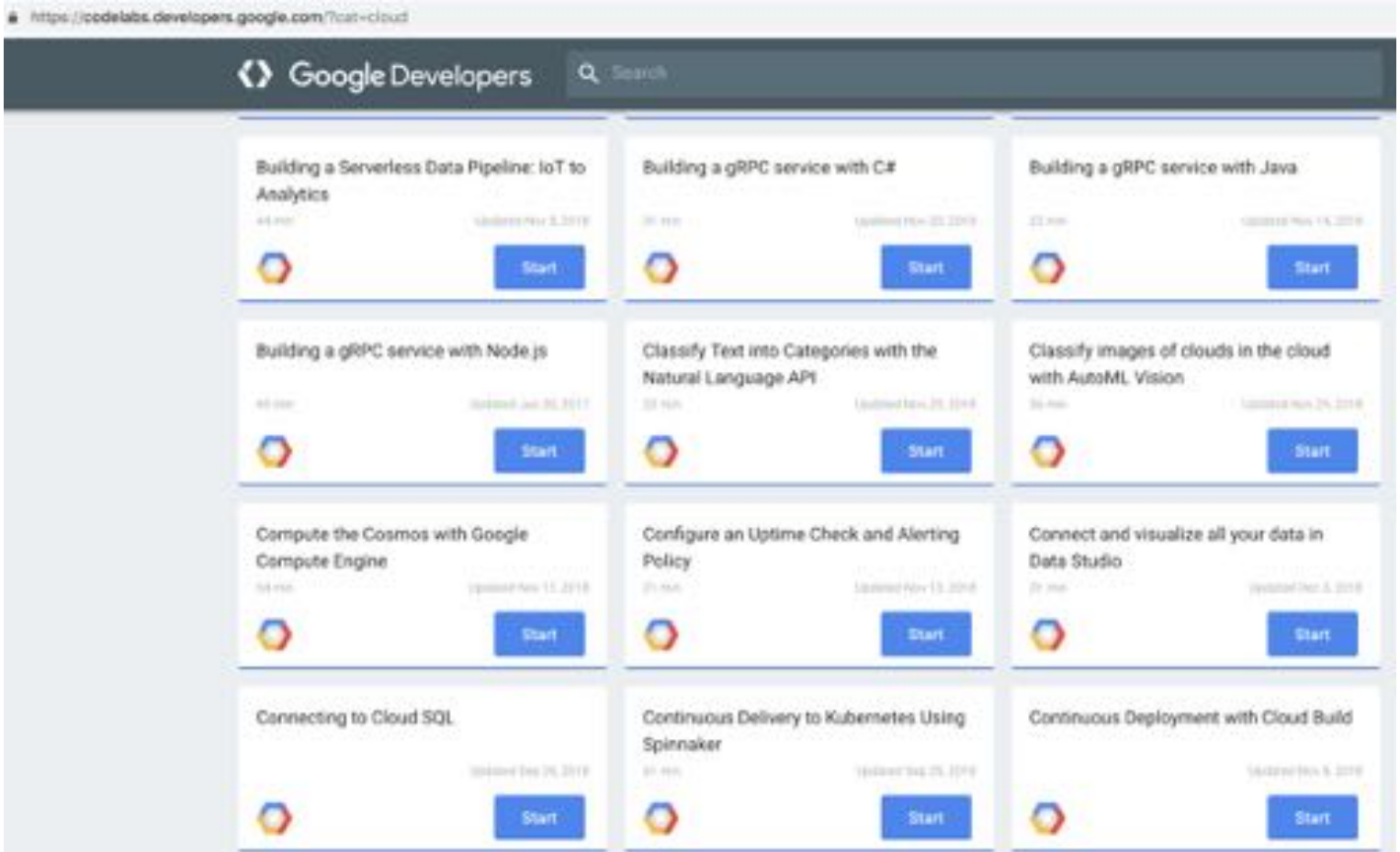
Resources: ai.google/education



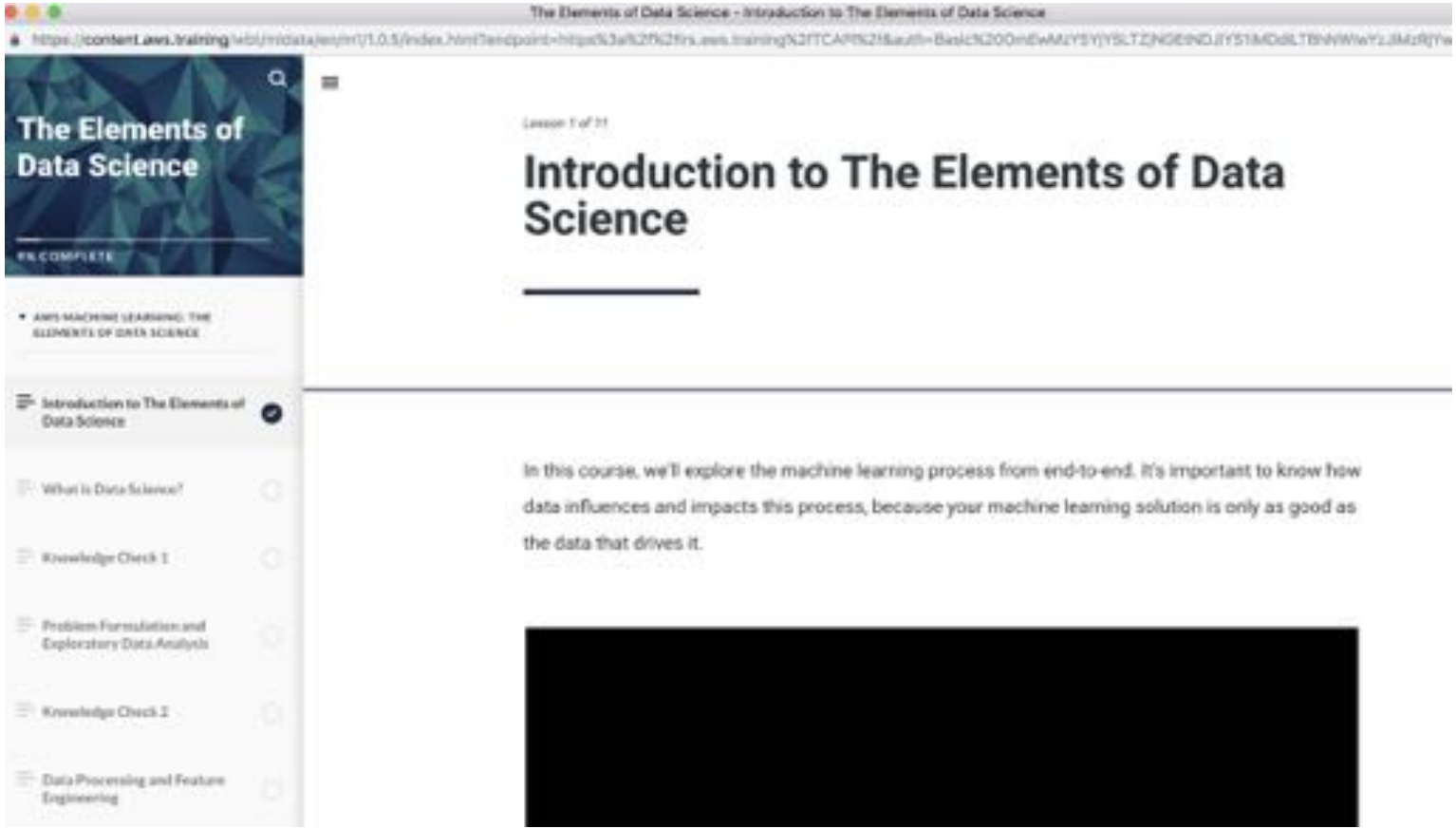
Resources: cloud.google.training



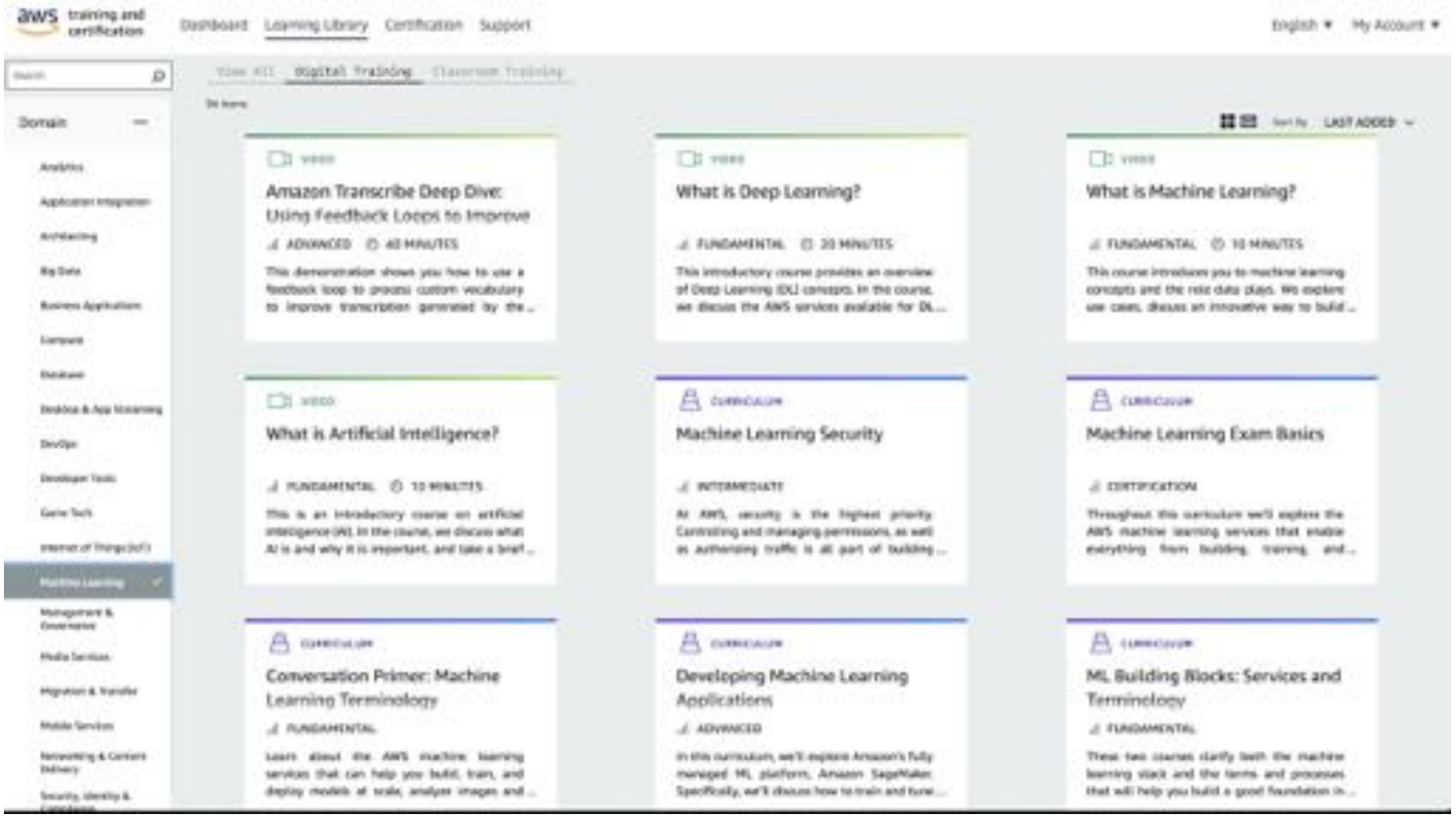
Resources: codelabs.google.com



Resources: aws.training (Courses)



Resources: aws.training



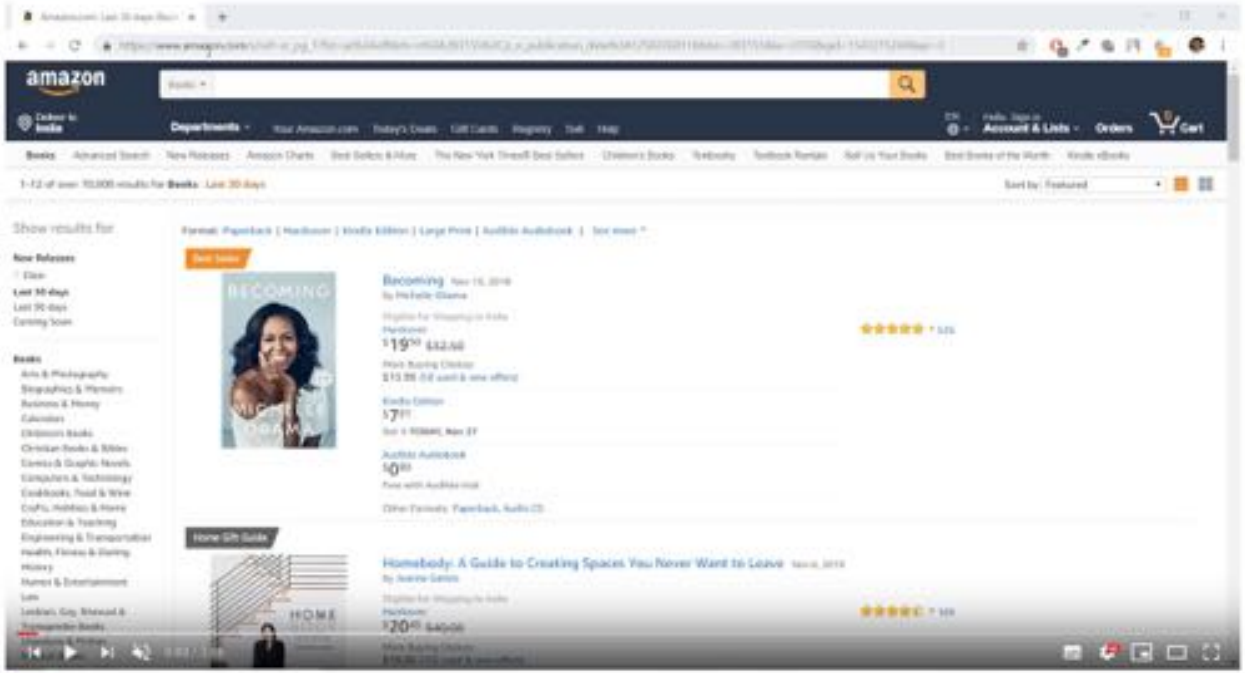
Resources: Machine Learning 101

docs.google.com/presentation/d/1kSuQyW5DTnkVaZEjGYCkfOxvzCqGEFzWBy4e9Uedd9k/

Resources: TechSEO Boost (Python/ML)

Python & SEO Talks @ TechSEOBoost: https://youtu.be/N0uJp_JXfOg

Resources: Scraping with Python



Python Scrapy Tutorial- 1 - Web Scraping, Spiders and Crawling

Python Scrapy Tutorial: https://youtu.be/ve_0h4Y8nuI