Add Machine Learning to Your Applications Today

University of Michigan
Google Cloud Platform provides the foundation for your data analytics and machine learning workloads

- BigQuery
- Cloud Dataflow
- Cloud Dataproc
- Cloud Datalab
- Cloud Pub/Sub
- Cloud Machine Learning
- Vision API
- Speech API
- Natural Language API
- Translation API
What Is Machine Learning?
Machine Learning provides a way to derive insights from data

data  algorithm  insight
Machine Learning is used in lots of industries

<table>
<thead>
<tr>
<th>Manufacturing</th>
<th>Retail</th>
<th>Healthcare and Life Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Predictive maintenance or condition monitoring</td>
<td>- Predictive inventory planning</td>
<td>- Alerts and diagnostics from real-time patient data</td>
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<td>- Warranty reserve estimation</td>
<td>- Recommendation engines</td>
<td>- Disease identification and risk satisfaction</td>
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<td>- Propensity to buy</td>
<td>- Upsell and cross-channel marketing</td>
<td>- Patient triage optimization</td>
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<td>- Demand forecasting</td>
<td>- Market segmentation and targeting</td>
<td>- Proactive health management</td>
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<td>- Process optimization</td>
<td>- Customer ROI and lifetime value</td>
<td>- Healthcare provider sentiment analysis</td>
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<td>- Telematics</td>
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<th>Travel and Hospitality</th>
<th>Financial Services</th>
<th>Energy, Feedstock and Utilities</th>
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<td>- Aircraft scheduling</td>
<td>- Risk analytics and regulation</td>
<td>- Power usage analytics</td>
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<tr>
<td>- Dynamic pricing</td>
<td>- Customer Segmentation</td>
<td>- Seismic data processing</td>
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<td>- Social media—consumer feedback and interaction analysis</td>
<td>- Cross-selling and upselling</td>
<td>- Carbon emissions and trading</td>
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<td>- Customer complaint resolution</td>
<td>- Sales and marketing campaign management</td>
<td>- Customer-specific pricing</td>
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<td>- Traffic patterns and congestion management</td>
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<td>- Smart grid management</td>
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<td>- Credit worthiness evaluation</td>
<td>- Energy demand and supply optimization</td>
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Google Cloud Training and Certification
Train a Machine Learning model with sample data

A ML model is a mathematical function

"football"

"dog"

"car"

"apple"

Label, input

Make tiny adjustments to model function so output is closer to label for a given input

OUTPUT
Use the trained model in your application

unlabeled photo

“football”
How people think Machine Learning works

Lots of data -> Maths! -> Magical results
Reality of creating Machine Learning solutions

Collect data

Organize data

Create model

Use machines to flesh out the model from data

Deploy fleshed out model
Google Machine Learning APIs
Google have crafted high quality ML APIs

- Translate API
- Vision API
- Speech API
- Language API
The Translate API provides fast, high quality translations

- Large number of supported language pairs
  - Extended frequently
- Two editions
  - Standard
  - Premium
The **Vision API** analyzes images with a simple programming model

- **Detect**
  - Faces
  - Logos
  - Objects
- **Assess content**
  - Adult
  - Violence
  - Spoof
  - Medical
The **Speech API** converts audio to text

- Supports over 80 languages
  - Extended frequently
- Highly accurate even in noisy environments
The **Language API** derives insights from unstructured text

- **Extract information**
  - People
  - Places
  - Events
- **Analyze sentiment and syntax**
  - Categorize email and Social media activity
Google Machine Learning API Demo
Resources

Product Documentation
https://cloud.google.com/products/machine-learning/

Try it yourself in a Codelab!
https://goo.gl/GoXynE