

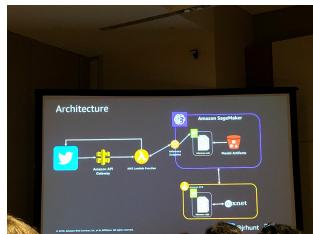
Building WhereML - an AI powered TwitterBot to identify locations from the pictures using MXnet

By Randall Hunt, Amazon Web Services

Built with Amazon SageMaker and AWS Lambda, based on LocationNet work by Jaeyoung Choi and Kevin Li

- Follow him on [Twitch.tv](#) - another medium to learn live coding. I thought it is only for gaming.
- GitHub: @ranman
- Blog: <https://aws.amazon.com/blogs/aws/author/randhunt>
- randhunt@amazon.com

Architecture

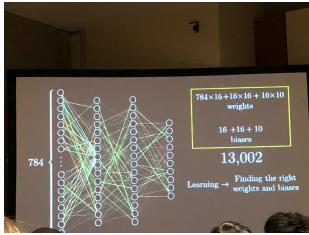


Brief intro to rise of artificial intelligence. From the mechanical perceptron, back propagation to current state of deep learning.
Ref: Preambulators.

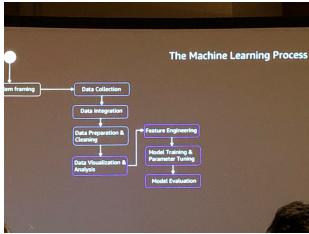
Mission statement of ML @ AWS: Put ML in the hands of every developer and data scientist.

Reviewing the ML process

- Gran Sanderson Youtube channel
- Some of the animation in this presentation was borrowed from this channel.
- example shown here: identifying numbers from images. Which data set is used?



- Framing the problem for WhereML
- Detour: AWS has public datasets available
- Data Collection -> Data Integration -> Data preparation & cleaning



- Google has a similar location identifier model with 40G of data.
- Amazon's model - about 180M, 3-4 times more accurate than Google's model.

Amazon SageMaker

- Fully managed service for data scientists and developers to easily build ML based models into production ready smart applications
- Customer implementation of common algorithms.
- SDK available on GitHub
- Detour: In multi-machine learning training models, one node act as key-value store -
- Components
 - Notebook instances - equivalent to Jupyter Notebooks
 - Algorithms - includes hyper-parameter optimization,
 - ML Training service
 - ML Hosting service
 - Typically hosts multiple models.

Building the Model

- PlaNet by Weyland et.all - Photo Gelocation with CNN
- LocationNet Model
 - Model trained and built with Apache MXNet
 - Trained 33M images from AWS Multimedia Commons Dataset

- for 12 epochs
- Interpreting the images into multi-scale partitioning.
- Pros/Cons
 - Surprisingly precise in cities with larger numbers of partitions, fast inference (<100ms on t2.large instance), small model (< 300MB)
 - Cons: less accurate with some common objects

Some more info

- AWS Lambda functions
- There is a service to get country flag emoji using the country code + offset
- All the demo code in the class are open source. Where to find?

Working with Twitter

- How to connect with Twitter APIs and WherML?
- Tidbit: Panda Gif was cute

Follow the live coding on twitch.tv/aws