

Fast and Curious: Car Classification

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01

The App

And why users will
love this app

WHAT CAR IS
THAT?



Be your own car-expert with just one app

Can you describe the appearance of your favorite car perfectly?

- Manufacturer & model
- Body type
- ... what if you don't know what car it is?

293 car models offered in the U.S. in 2019!
An easier, streamlined experience for identifying and
finding cars

Making Car Purchasing EASIER



Take a picture of a car

Upload/take picture



Confirm results & addit. details

Confirm result and additional preferences to receive KellyBlueBook summary and estimate



Purchase the best match online

Direct to favorite car sites such as AutoTrader, CarsDirect, CarGurus with parameters

Website

- Website powered by Flask and TensorFlow
- Easy drag and drop interface
- Classify and recommend cars

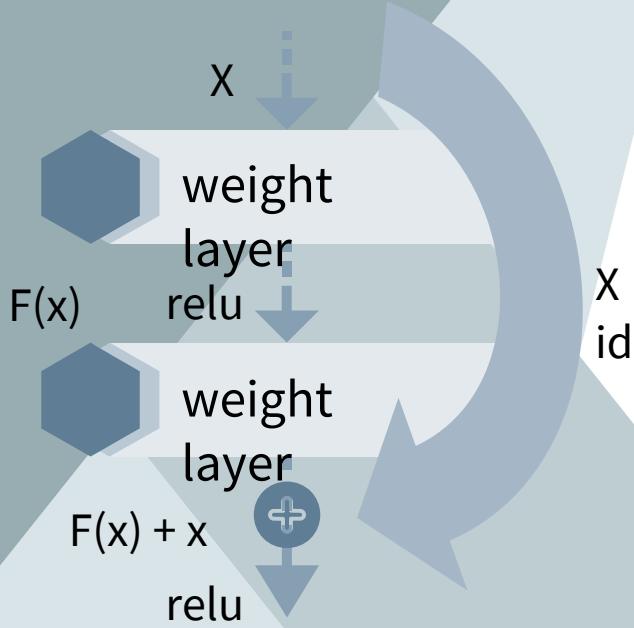


02

Data & Model

The engine
powering our app

ResNet50: winner of ImageNet 2015 challenge using skip connection

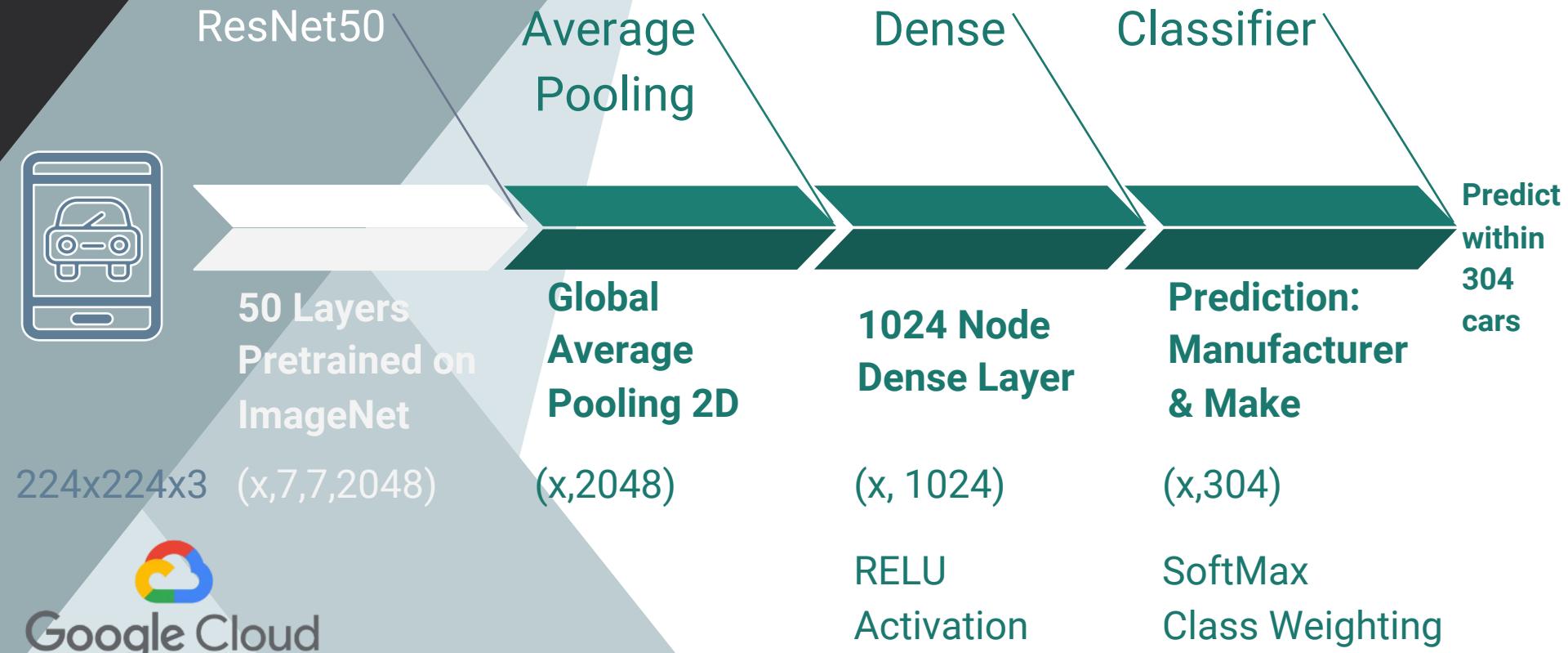


craigslist

- 93k image urls from Kaggle car dataset
- Scraped images and mapped back to classes from dataset
- Class: Make and model
- 304 imbalanced classes
- 32 manufacturers
- Dealership and street images

	Images
Ford	13,965
Chevrolet	11,316
Toyota	8,554
Honda	5,153
Jeep	4,771
Nissan	4,535
GMC	3,885
Ram	3,468
...	...

Neural Network Classifier



03

Analysis

Accuracy and
improvements

90.6%

Validation Accuracy

97.0%

Top-5 Classification Acc.

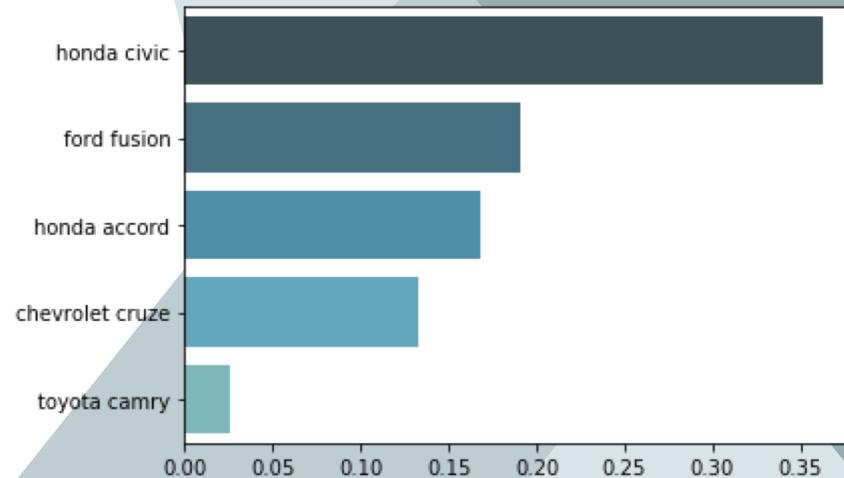


Input: 2020
Honda Civic
Coupe EX



Prediction:
Honda Civic

Model Performance



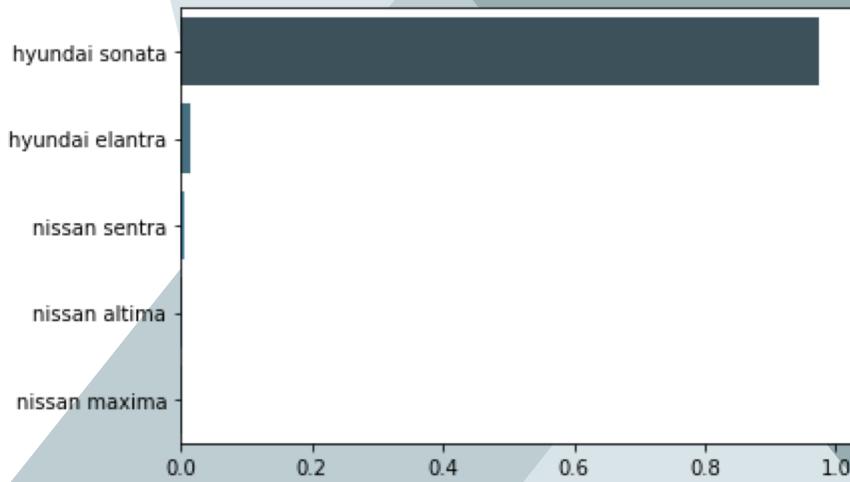


Input:
Hyundai
Elantra 2019

Model Performance



Prediction:
Hyundai
Sonata





User Input

Users provide correct labels and own preferences



Improve Database

Images, labels, and user info used to update algorithm with consent of users

Revenue & Usage Statistics

Commission redirects to car websites and user statistics sent



Business Model and Improvements

Thanks!

Any questions?

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Appendix

Sources Used:

- <https://www.statista.com/statistics/200092/total-number-of-car-models-on-the-us-market-since-1990/>
- <https://craigslist.org/>
- 3D Object Representations for Fine-Grained Categorization
Jonathan Krause, Michael Stark, Jia Deng, Li Fei-Fei
4th IEEE Workshop on 3D Representation and Recognition, at ICCV 2013 (3dRR-13). Sydney, Australia. Dec. 8, 2013.
- ImageNet
- <https://www.kaggle.com/austinreese/craigslist-carstrucks-data>

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