# Preferred Networks, Inc.

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Preferred Networks, Inc. (PFN) at a glance

- Founded: March 2014 (Spin-off from Preferred Infrastructure)
- Located: Tokyo, Japan
  San Mateo CA. US (PFN America)
- Number of Employees: 40 Engineers & Researchers (*and Hiring*)
- Investors: NTT (2014), Fanuc (2015), Toyota (2015)
- Our focus: Distributed Deep Learning applied to transportation, manufacturing, and healthcare industries
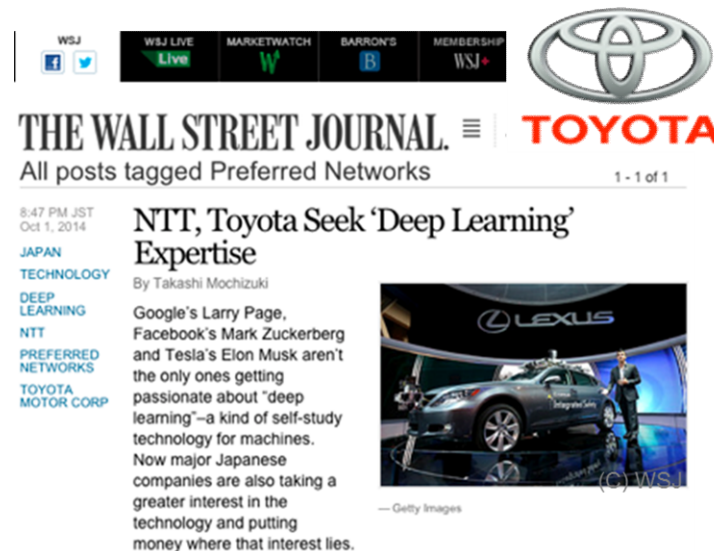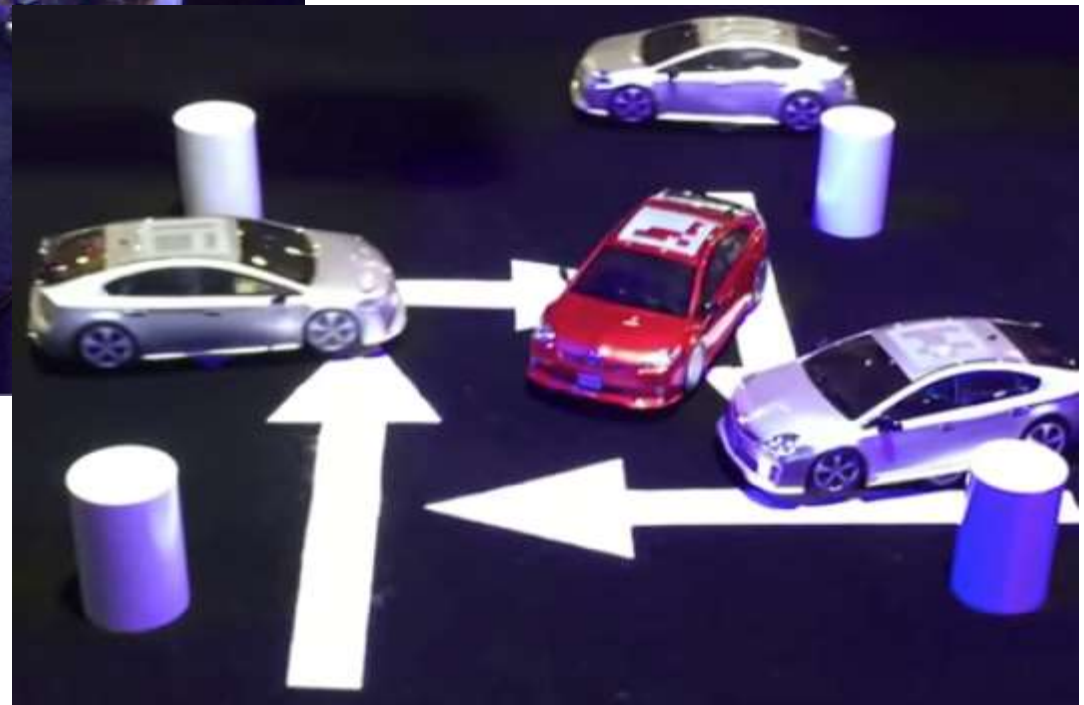
Deep Learning Application (1): Autonomous Vehicle
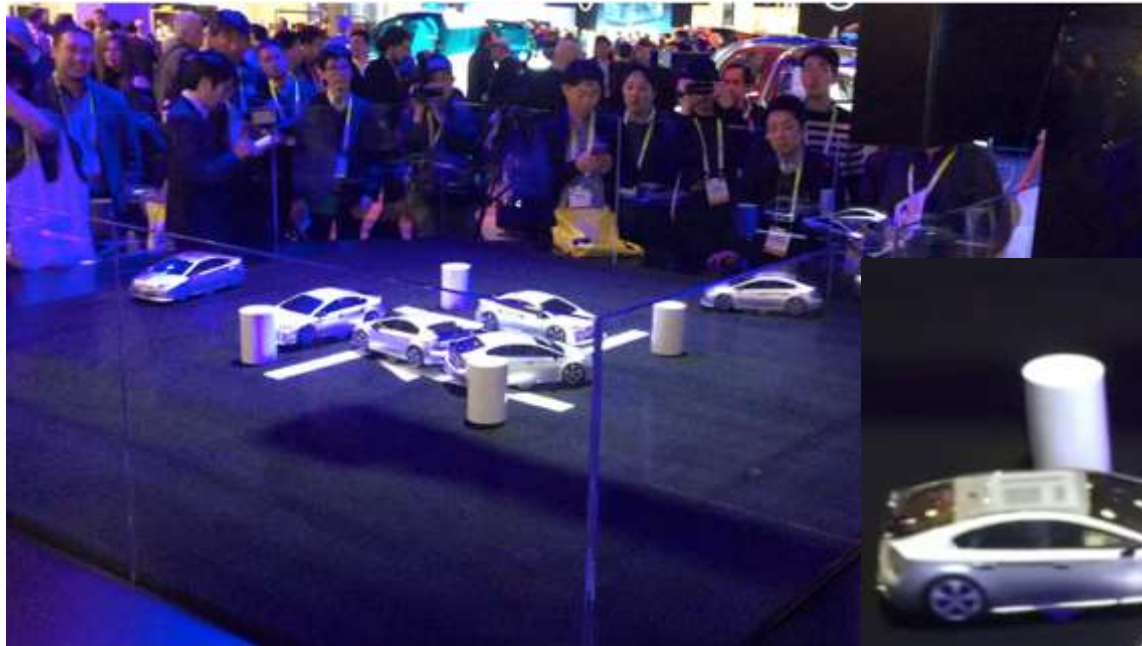
Presented at the Toyota booth in the main venue of CES 2016

- Silver cars are autonomous, trained by deep reinforcement learning
- The red car is driven manually

Moive: https://www.youtube.com/watch?v=7A9UwxvgcV0

Deep Learning Applications (2): Intelligent industrial robots

Bulk bin-picking: 8 hours of self-training achieves 90% success rate, comparable to the best human trainer

At Amazon picking challenge 2016 PFN won the 2nd prize in the picking task

https://www.youtube.com/watch?v=ydh_AdWZflA

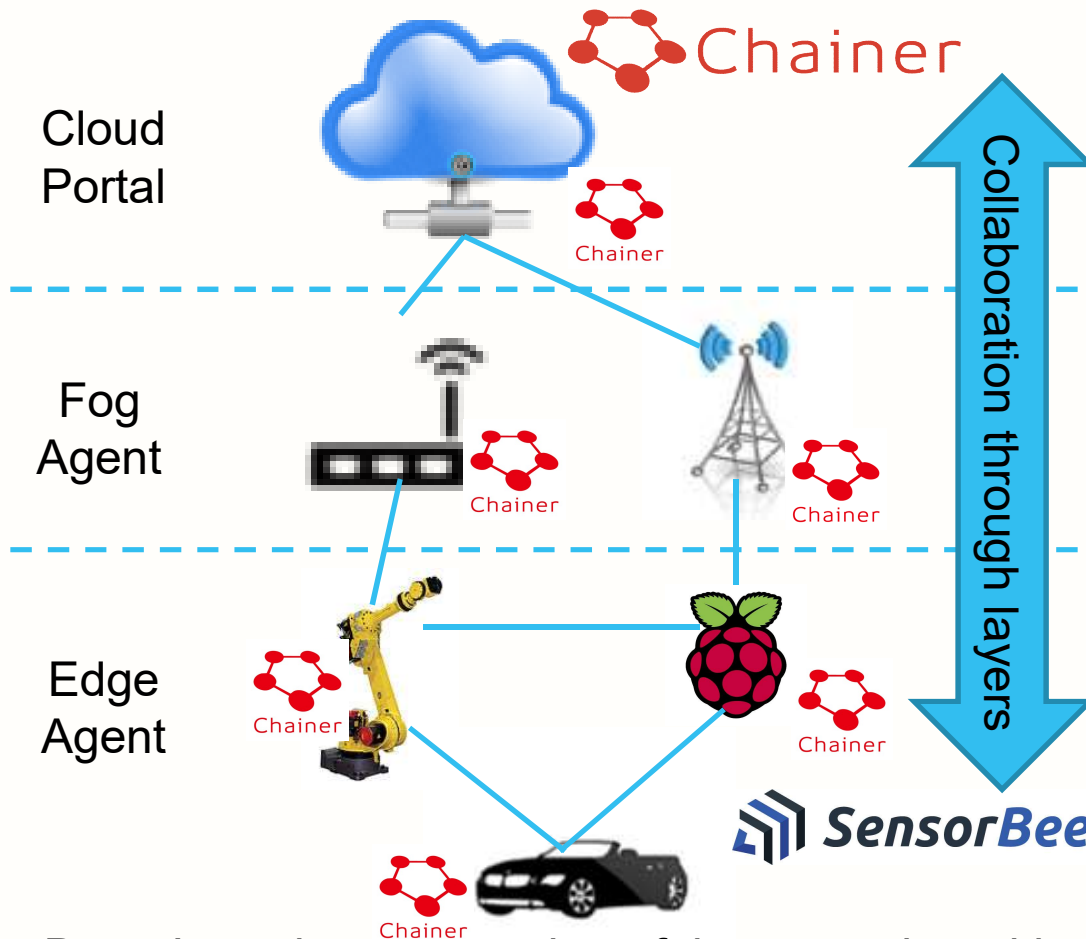https://twitter.com/hillbig/status/7496054943 69742848

Chainer (http://chainer.org/):
Open source framework for deep neural networks

- Its unique on-the-fly network construction enables building various types of NN's, including CNN (convolutional NN), RNN (recurrent NN), and autoencoders in a single framework
- Runs on latest GPU's to attain highest performance in training and inferencing
- Worldwide developer community is expanding
- Used as the core of all PFN's applications

DIMo : Deep Intelligence in-Motion

DEEP INTELLIGENCE IN MOTION

Cloud Portal

Chainer

Chainer

Fog Agent

Chainer

Chainer

Edge Agent

Chainer

Chainer

Chainer

SensorBee

Collaboration through layers

Control Deep Learning running at the edge of the network from the Cloud!

Integrate Deep Learning to Fog/IIoT platforms such as FANUC FIELD system

Sophisticated DL packages:
- Computer vision
- Anomaly detection
- Energy demand prediction
- Reinforcement learning
- More coming soon

Deep Learning at the edge of the network and in the fog
- Low latency data processing/information extraction
- Autonomous smart collaboration between edge devices
- Filter data at the edge/fog to reduce bandwidth usage

DIMo
DEEP INTELLIGENCE IN MOTION