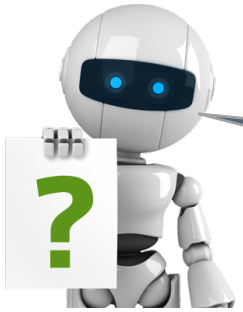
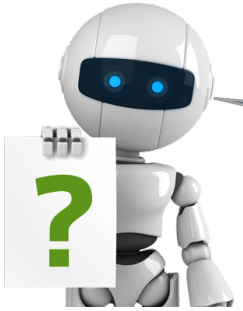
Next Steps

Anomaly Detection



Tennis Ball

Today



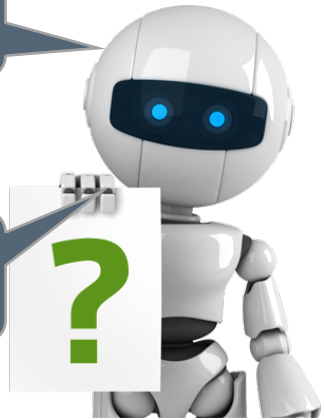
I do not know what this is.

Anomaly Detection

Explainable A.I.

Shoe

Puma



How to Prevent Adversarial Attack?

Adversarial Attack

Human

Machine

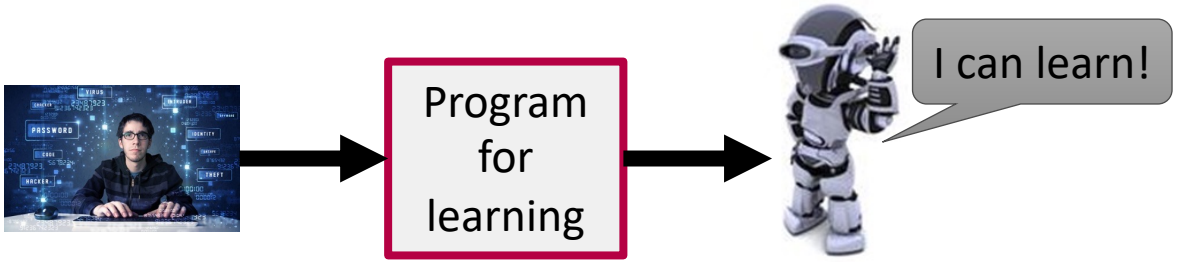
"panda"
57.7% confidence

"gibbon"
99.3% confidence

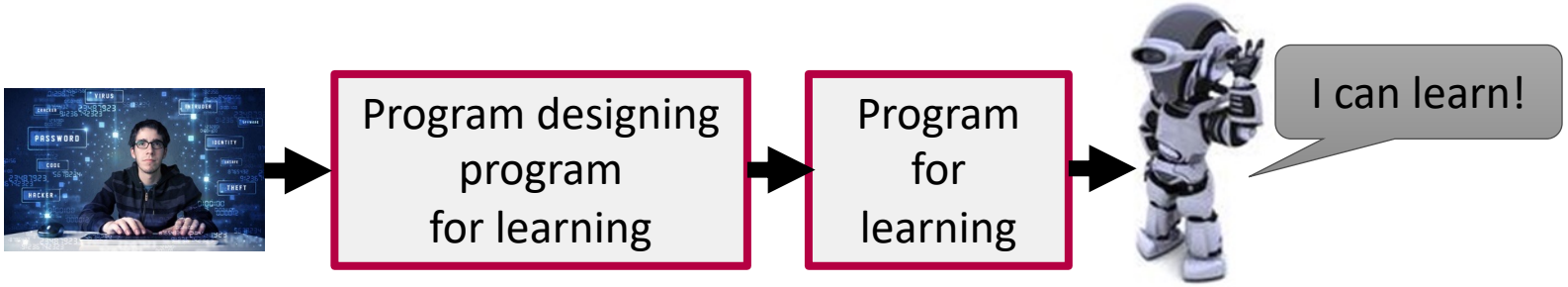
Lifelong Learning

Learn to Learn

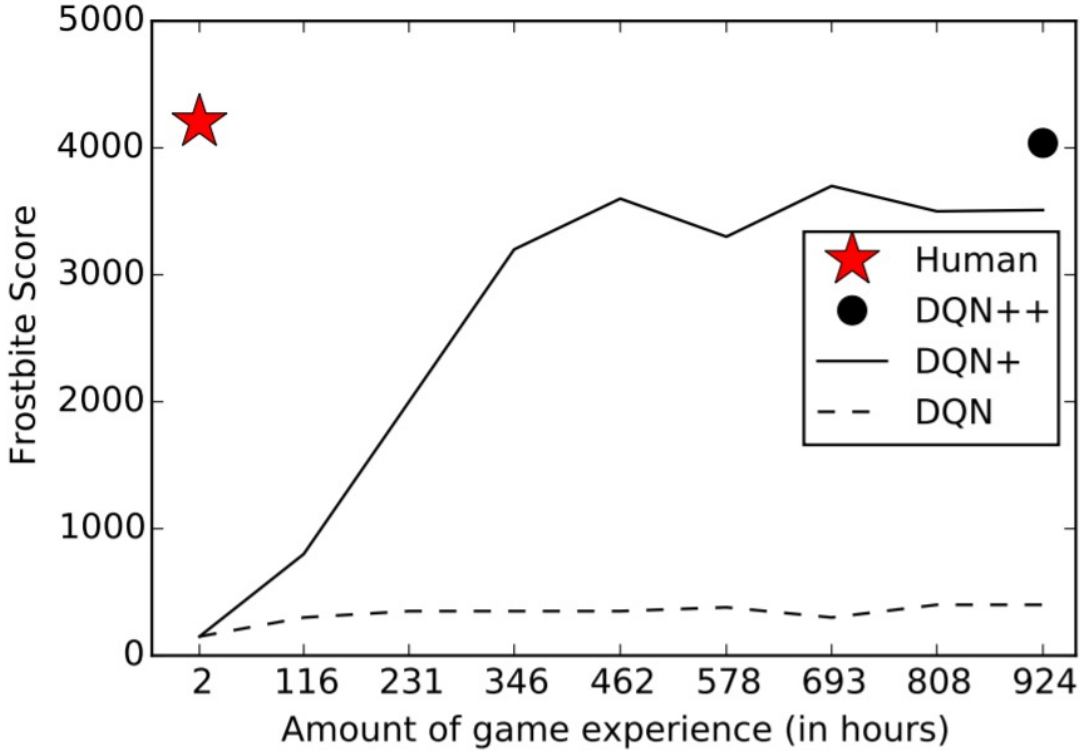
- Now we design the learning algorithm.



- Can the machine learn the learning algorithm?



Reinforcement Learning



Reinforcement Learning, Continued

In order to train AlphaStar, we built a highly scalable distributed training setup using Google's v3 TPUs that supports a population of agents learning from many thousands of parallel instances of StarCraft II. The AlphaStar league was run for 14 days, using 16 TPUs for each agent. During training, each agent experience up to 200 years of real-time StarCraft play. The final AlphaStar agent consists of the components of the Nash distribution of the league–in other words, the most effective mixture of strategies that have been discovered–that run on a single desktop GPU.

Wrong Assumption

Training data and testing data have the same distribution.

Training data

Testing data

This is a lie.

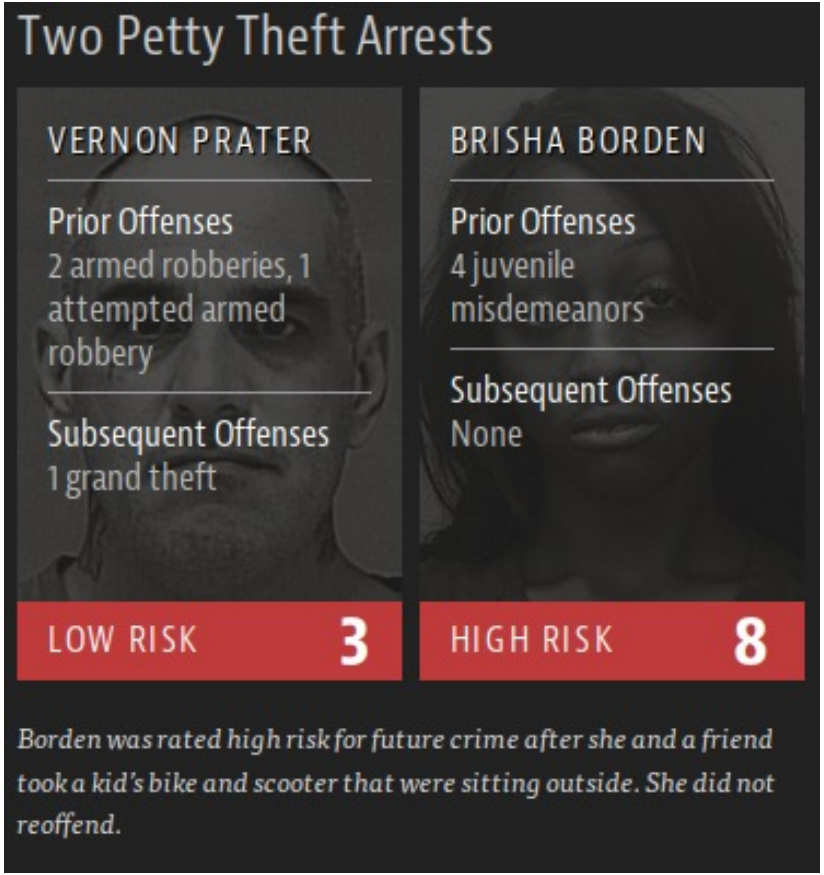
Wrong Assumption, Continued

How to do unsupervised domain adaption?

Training data - 99.5%

Testing data – 57.5%

Ethical Considerations



References

- Angwin, J., Larson, J., Mattu, S., & Kirchner, L. (2016, May 23). Machine bias. *Pro Publica*.
- Ganin, Y., & Lempitsky, V. (n.d.). Unsupervised domain adaption by backpropagation.
- Lake, B.M., Ullman, T.D., Tenenbaum, J.B., Gershman, S.J. (n.d.). Building machines that learn and think like people.