

---

---

# Coaching Artificial Intelligence

By: Anirudh Veeraragavan

---

—

How is a five year old &  
a convolutional neural network  
**similar?**

---

# The way they best learn!

(Being actively taught by people)

# The Article

**New  
Scientist**

SUBSCRIBE AND SAVE 48%

MANAGE MY ACCOUNT

STUDENT

SCHOOLS AND UNIVERSITIES

GIVE A GIFT

[HOME](#) [NEWS](#) [TECHNOLOGY](#) [SPACE](#) [PHYSICS](#) [HEALTH](#) [EARTH](#) [HUMANS](#) [LIFE](#) [TOPICS](#) [EVENTS](#) [JOBS](#)

SUBSCRIBE

SEARCH 

LOG IN 

[Home](#) | [News](#) | [Technology](#)

---

DAILY NEWS 24 April 2017

## AI learns to play video game from instructions in plain English

# The Paper

## Beating Atari with Natural Language Guided Reinforcement Learning

Russell Kaplan, Christopher Sauer, Alexander Sosa

*(Submitted on 18 Apr 2017)*

We introduce the first deep reinforcement learning agent that learns to beat Atari games with the aid of natural language instructions. The agent uses a multimodal embedding between environment observations and natural language to self-monitor progress through a list of English instructions, granting itself reward for completing instructions in addition to increasing the game score. Our agent significantly outperforms Deep Q-Networks (DQNs), Asynchronous Advantage Actor-Critic (A3C) agents, and the best agents posted to OpenAI Gym on what is often considered the hardest Atari 2600 environment: Montezuma's Revenge.

Subjects: **Artificial Intelligence (cs.AI)**

Cite as: [arXiv:1704.05539](#) [cs.AI]

(or [arXiv:1704.05539v1](#) [cs.AI] for this version)

# Benefits

- Control
- Efficiency
- Expansion

# Implications

- Intelligence
- Rich Data
- Sparse-reward

# Opinion

- Impressive Results
- Not General



# TL;DR

Neural networks  
are being trained  
in an inefficient  
way

New framework  
allows for people  
to actively train  
neural networks

This bridges the  
gap between AI  
and humans

# Bibliography

- 1) Edd Gent. 2017. AI learns to play video game from instructions in plain English. (April 2017). <https://www.newscientist.com/article/2128575-ai-learns-to-play-video-game-from-instructions-in-plain-english/>
- 2) Russell Kaplan, Christopher Sauer, and Alexander Sosa. 2017. Beating Atari with Natural Language Guided Reinforcement Learning. Cornell University Library (April 2017). DOI: 1704.05539 <https://arxiv.org/pdf/1704.05539.pdf>
- 3) Marc G. Bellemare, Sriram Srinivasan, Georg Ostrovski, Tom Schaul, David Saxton, and Remi Munos. 2016. Unifying Count-based Exploration and Intrinsic Motivation.. Cornell University Library (June 2016). DOI: 1606.01868 <https://arxiv.org/pdf/1606.01868.pdf>