

# Shawn Jain

San Francisco, CA  
[shawnjain.net](http://shawnjain.net)

## Summary

Researcher and engineer investigating core problems in artificial intelligence, cognition, and sensing. Targets applications in computer vision, robotics, and natural language.

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## Education

### Massachusetts Institute of Technology

*M.Eng. Computer Science, A.I. Concentration*

**September 2016 - September 2017**

Cambridge, MA

- Thesis: [VirtualHome: Learning to infer programs from synthetic videos of activities in the home](#)
- Research Area: Computer Vision; Advisor: Antonio Torralba

### Massachusetts Institute of Technology

*S.B. Electrical Engineering and Computer Science*

**September 2012 - August 2016**

Cambridge, MA

- Best undergraduate lab project: *Automatic Projector Tilt Compensation System*, implemented on Xilinx FPGA

### Illinois Mathematics and Science Academy

*High School Diploma*

**September 2010 - June 2012**

Aurora, IL

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## Experience

### OpenAI

*Researcher (Member of Technical Staff)*

**January 2021 - Current**

San Francisco, CA

- Code Generation: Taught GPT to iteratively debug code using a python interpreter. Released as Code Interpreter/Advanced Data Analysis in ChatGPT. Used by millions of paid subscribers.
- Open-Endedness: Algorithms that run forever and generate an endless variety of interesting artifacts. Co-Authoring "Evolution through Large Models" [\[Paper\]](#), combining LLMs with these algorithms to create SOTA results across diverse domains. Pioneered this line of research combining Genetic Programming/Evolutionary Algos and LLMs.

### Microsoft Research

*AI Resident*

**September 2019 – September 2020**

Redmond, WA

- "Do Transformers Understand Time?" [\[Blog\]](#) [\[Poster\]](#) Mentors: Hamid Palangi, Yonatan Bisk
- "Fast training and inference for NNs, applications to Transformer models." Mentor: Greg Yang

### Independent Researcher

*Scholar*

**February 2019 - August 2019**

Aurora, IL

- Texts Reviewed: Introduction to Statistical Learning, Deep Learning Book [Ch. 1-9, 11-12]
- Implementations (most from scratch): Neural Networks/SGD, k-means clustering, SVM, GPs, Naïve Bayes, PCA/SVD applications, HOG features, decision trees. More at [shawnjain.net](http://shawnjain.net)
- Organized study groups with 3+ members, 2x per week; set agenda, kept engagement high for 12+ months.

### Uber Advanced Technologies Group

*Perception Engineer*

**October 2017 – February 2019**

Pittsburgh, PA

- Independently led research, prototyping, and production implementation of a learning algorithm to calibrate lidar intensity to the physical property of reflectance. US Patent 10,598,791 B2 [\[Patent\]](#)
- Delivered a turnkey calibration solution that works in a mixed lidar vendor fleet, including Velodyne HDL-64e
- The algorithm enabled an online lidar intensity-based localization system and an online lane extraction system

### Optimus Ride

*Software Engineer Intern - Perception and Localization*

**Summer 2016**

Cambridge, MA

### Spot Trading

*Software Developer Intern - Options and Futures Strategies*

**Summer 2015**

Chicago, IL

### Google Fiber

*Software Engineer Intern - Embedded Linux Networking*

**Summer 2014**

Mountain View, CA

### Fermi National Accelerator Laboratory

*Research Intern - Main Injector Division*

**Summer 2010**

Batavia, IL

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## Ventures

### Voxel AI

September 2020 - December 2020

Co-Founder

Remote

- Use existing security cameras to improve worker safety in warehouses via computer vision; automatically flag Vehicle Safety, PPE, Ergonomics, and Area Control issues.
- Computer Vision lead; set up a data labeling team, trained models, and developed metrics to evaluate the model
- Recognized by FastCompany as one of the 10 most innovative AI companies in 2023 [\[Article\]](#).

### Kommonly

Spring 2014

Founder

Cambridge, MA

- Connecting non-profit organizations seeking sponsorship to companies seeking to grow their branch.
- Organized a partnership with MIT Undergraduate Student Government to fund student clubs and hackathons.
- Got an on-site interview at Y-Combinator Summer 2014, semi-finalist at the MIT 100k - Pitch, and the Harvard i3.

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## Writing, Code, and Demos

More at [shawnjain.net](http://shawnjain.net)

- Evolution Through Large Models (ELM) [\[Paper\]](#)
- Do Transformers Understand Time? [\[Blog\]](#) [\[Poster\]](#)
- Reproducing Uber AI Labs' Deep Neuro-Evolution Paper [\[Blog\]](#) [\[Code\]](#)
- Why Hard Tech [\[Blog\]](#)
- Gradient Descent and Chain Linked Systems [\[Blog\]](#) [\[Code\]](#)
- Test#Code [\[Blog\]](#) [\[Code\]](#)
- Object Detection Based on Lidar Intensity US Patent 10,598,791 B2 [\[Patent\]](#)
- VirtualHome: Learning to infer programs from synthetic videos of activities in the home [\[Thesis\]](#)
- Naive Bayes from scratch [\[Demo\]](#)
- NNs/SGD from scratch [\[Demo\]](#)
- SVM from scratch [\[Demo\]](#)
- Gaussian Processes from scratch [\[Demo\]](#)

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## Interests and Activities

- Blogging, speaking, and advising on emerging tech; Science and Technology communicator
- Automotive technologies; in-car computing, inter-vehicle communication, vehicle as a software platform
- Electrical grid independence; home batteries, PV solar, vehicle to grid, dynamic load scheduling
- STEM education for youth; Physics First and Problem Based Learning advocate
- Audio & sound reproduction technologies; audio signal processing
- Active Stock Trader; options and futures trading
- Digital photography: portrait, event, wildlife
- Hindi, Conversational Mandarin

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## Teaching

### Digital Electronics Lab, MIT 6.111 ("Digital Death")

Teaching Assistant

Fall 2016

Cambridge, MA

### Signals and Systems, MIT 6.003

Teaching Assistant

Spring 2017

Cambridge, MA

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## References

By Request