Miles Dai

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Education

Massachusetts Institute of Technology **Cambridge, MA**
Candidate for Bachelor of Science in Computer Science and Electrical Engineering *June, 2020*
- GPA: 4.9/5.0
- Coursework: Feedback Control, Digital Design Competition (6.S193), Power Electronics Lab, Signals and Systems, Computation Structures, Introduction to Circuits and Electronics (Lab Assistant)

Professional Experience

Dimensional Insight **Cambridge, MA**
Software Engineering Intern *June 2018 - August 2018*
- Created data visualizations with D3.js for use in a business intelligence dashboard web interface
- Worked closely with project lead to define parameters and specifications for projects from customer requests

Affective Computing Group, MIT Media Lab **Cambridge, MA**
Undergraduate Researcher *May 2017 May 2018*
- Applied computer vision techniques and deep neural networks for predicting the engagement levels of autism-spectrum patients on a per-patient basis to improve the effectiveness of autism therapy
- Worked on full pipeline, including data preprocessing, feature extraction, model development, training, and testing
- Publication: O. Rudovic, J. Lee, **M. Dai**, B. Schuller, R. W. Picard, Personalized machine learning for robot perception of affect and engagement in autism therapy, *Science Robotics*, 27 Jun 2018: Vol. 3, Issue 19, eaao6760

Distributed Robotics Lab, MIT Computer Science and Artificial Intelligence Laboratory **Cambridge, MA**
Undergraduate Researcher *January 2017 May 2017*
- Prototyped a spherical, auxetic, volumetrically-expanding robot module to help streamline the robot design and fabrication process through the use of modular components
- Created a communication protocol for wirelessly controlling a network of Texas Instruments MSP430 microcontrollers

Projects

Next Make, Solder Your Own Circuit Board Event **2016-present**
- Programmed an ATtiny microcontroller as part of an annual circuit board soldering activity for over 50 incoming freshmen
- Designed PCBs in Eagle and had them manufactured in bulk

Coursework Projects
- Induction Heater (*6.1311: Power Electornics Lab*): contactless heating from a resonant tank and a MOSFET totem pole
- RFID Lab (*6.002: Circuits and Electronics*): designed a lab in which students build an RFID reader

Automated Jigsaw Puzzle Solver **September 2017**
HackMIT Hackathon Project
- Created a program in under 24 hours to solve jigsaw puzzles given only images of the pieces
- Designed and implemented heuristics such as edge convexity and color-matching of puzzle pieces using Python and OpenCV to search for the most probable fit

Compact, Low-Cost Colorimeter **May 2016**
- Designed and built a colorimeter (device to measure light absorbance of solutions) for under $60 with off-the-shelf parts
- Measured absorbance at 720, 512, and 465 nm with high precision and low cost

Leadership and Volunteering

Next Makerspace Chair **2018-present**
- Supervised the planning and construction of a makerspace within a student dorm

Next Make, President **2016-present**
- Programmed games in C for an ATtiny microcontroller as part of a circuit board soldering activity for 50 MIT freshmen
- Designed, prototyped, and manufactured an electronic piano PCB for an MIT freshmen outreach event

MIT Science Olympiad, Planning Committee **2016-present**
- Organize an annual Science Olympiad tournament at MIT for over 1,000 high school students

Skills

Programming Languages: Python, Java, MATLAB, HTML, CSS, JavaScript with D3.js, C
CAD/Digital Fabrication: Solidworks, Autodesk Inventor, EAGLE, Laser cutting, 3D printing, waterjet, mill