Derek Qin

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Education

California Institute of Technology, Pasadena, California *Sept 2020 - Present*

- B.S. Major: Computer Science (ML & Robotics), Minor: Information and Data Sciences; **GPA:** 4.0
- **Selected Coursework: CS:** Data Structures, Software Development, Computing Systems, Algorithms, Machine Learning, Learning Systems, Computer Vision; **Math:** Discrete Math, Linear Algebra (Analytical), Statistics

Experience

- **Caltech Tensor Lab** Pasadena, CA
  Machine Learning Researcher *February 2021 - Present*
  - Designed FC-based neural network to improve performance of Fourier Neural Operators on PDEs with nonperiodic boundary conditions
  - *Mentors: Prof. Anima Anandkumar, Zongyi Li*
- **Boston University Ludwig Lab** Boston, MA
  Researcher *June 2019 - February 2020*
  - Developed computer vision analysis software using to speed up MOSS analysis and improve precision
  - *Mentors: Prof. Karl Ludwig, Peco Myint*

Skills

- **Programming Languages:** C/C++, Java, JavaScript, Python, SQL, MATLAB, HTML/CSS, LaTeX
- **Tools:** PyTorch, TensorFlow, Keras, scikit-learn, Numpy, pandas, Git, FEniCS
- **Frameworks:** React, Django
- **Languages:** Fluent in English and Mandarin Chinese

Projects

- **Facebook Data Analyzer** Python, Pandas, Django, Heroku
  Full-Stack Development *June 2021 - Present*
  - Web application for interpreting and analyzing personal Facebook data.
- **Turtle Run Game** C, SDL
  Software Development *February 2021 - June 2021*
  - Developed physics engine and 2D side scrolling game with full GUI.
- **Phantom Traffic Jam Alleviation Using Networked Autonomous Cars** Python
  Computer Science & Applied Mathematics *August 2018 - April 2019*
  - Created a differential microscopic traffic model to model flow rate and jam dissipation for bilateral and vehicle unit control.
- **Traffic Signal Control Simulation for Optimization of Vehicle Flow** Python, Google Maps API
  Computer Science & Applied Mathematics *August 2017 - March 2018*
  - Developed signal management algorithm resulting in 18% average decrease in wait time.

Selected Awards

- USA Physics Olympiad, Honorable Mention (National Top 200 Individuals) (2019)
- Harvard-MIT Mathematics Tournament, Team Round, 10^{th} Place (2018)
- 5x American Invitational Mathematics Exam (AIME) Qualifier (2015, 2016, 2017, 2018, 2019)