

# Franklin Wang

☎ (650) 223-4390 @ fxiwang@mit.edu

## Links

🐙 GitHub [frankxiwang](#)  
in LinkedIn [frankxiwang](#)  
ID ORCID [0000-0003-4488-7355](#)

## Education

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Pursuing CS Degree  
📅 2022 - 2026

### PALO ALTO HIGH SCHOOL

📅 2018 - 2022

## Notable Coursework

### FOOTHILL COLLEGE

Multivariable Calculus  
Linear Algebra  
Differential Equations  
Discrete Math

### DEEPLARNING.AI

Completed Andrew Ng's  
[deeplearning.ai](#) 5 part specialization  
course on Coursera

## Skills

### PROGRAMMING LANGUAGES

Python • Java • C++ • C#

### ML/DATA SCIENCE LIBRARIES

TensorFlow • Keras • NumPy • SciPy •  
Pandas • Scikit-image • Scikit-learn

## Awards

### INTERNATIONAL SCIENCE AND ENGINEERING FAIR 2021

- 1st Place in Physics & Astronomy
- Peggy Scripps Award for Best Science Communication

### DAVIDSON FELLOW LAUREATE 2021

- Received top \$50K scholarship for machine learning asteroid detection research project
- Awarded to only the top 4 projects

### USA COMPUTING OLYMPIAD

- Ranked in the top 100 for the 2020 US Open contest for the Platinum (highest) division
- Experienced with Java and C++ for competitive programming

## Research

### FAINT, FAST-MOVING ASTEROID STREAK DETECTION

📅 2019 - 2022

Links: 🐙 [GitHub Repo](#) 📄 [arXiv PDF](#) doi [DOI](#)

- Research paper published in the Monthly Notices of the Royal Astronomical Society Journal (first author) and was presented at the **AAS 240 Conference**
- Developed a novel algorithm which utilizes Convolutional Neural Networks and a purely synthetic dataset to find fast moving near-Earth asteroids in CCD telescope data
- Detected six previously undiscovered asteroids in just four nights of data from the Zwicky Transient Facility which were missed by ZTF's own detection algorithms
- Improved upon ZTF's previous research by creating a near-Earth asteroid detection approach that does not require any real image data, removing the need for heavy amounts of manual data collection and annotation

### ORBIT DETERMINATION OF 2004 LJ1 WITH THE SUMMER SCIENCE PROGRAM

📅 Summer 2021

Links: 🐙 [GitHub Repo](#)

- Wrote Method of Gauss program in Python to find orbit of potentially hazardous asteroid 2004 LJ1 using observations made from Sierra Remote Observatories & Central Washington University
- Used approaches such as iterative optimization, Newton's method, Taylor series, least-squares, Monte Carlo sampling

## Work Experience

### NLP RESEARCH INTERN AT UNIPHORE

📅 Summer 2022

- Contrastively train Bi-LSTM model using TensorFlow to improve sentence embeddings for empathy detection in call center transcripts
- Experiment with multimodal (audio + text) models for emotion prediction

### SOFTWARE INTERN AT NOAH MEDICAL

📅 Summer 2020

- Used C++ and C# for mesh decimation, sensor tracking & registration, navigation visualization, and sensor accuracy evaluation
- Worked frequently with quaternions, rotation matrices, and vectors

### APPLE PI DEEP LEARNING CLASS INSTRUCTOR

📅 2020 - 2022

- Created and taught the curriculum which made complex topics in deep learning like gradient descent and linear algebra accessible to high school students

## Other Programming Projects

### VISUAL ML

Links: 🐙 [GitHub Repo](#) 🌐 [Website](#)

- An online neural network sandbox that allows users to create and train convolutional neural nets without needing to know how to code

### FIRSTSTEP.ID

Links: 🐙 [GitHub Repo](#) 🌐 [Website](#) 📄 [Writeup by #cut50](#)

- FirstStep.id is a website that allows those who have recently been released from jail to figure out what forms of identification they may need to apply for (State ID, Driver's License, etc)
- Work with the #cut50 nonprofit, created the backend using Flask and Python
- Won 1st place at the Second Chances Empathy Hackathon at Santa Clara University