

# Tony Tong

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## EDUCATION

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**University of California, Irvine**  
B.S. Physics  
B.S. Computer Science

Class of 2020  
Senior

## EMPLOYMENT

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### CERN

*ATLAS Associated Member*


Geneva, Switzerland  
Jul 2019 - Present

- Working on electron identification at ATLAS experiment; distributing the simulation code on various clusters
- Tweaking data analysis techniques to better represent the recent EID methods based on likelihood
- Developing deep neural networks to distinguish prompt electrons from background events e.g. hadrons
- Building docker and singularity images to ease the process of using various frameworks on different clusters

### Fixstars Solutions

*Deep Learning Engineer Intern*

Irvine, CA  
Apr 2019 - Jun 2019

- Developed multiple deep neural networks using PyTorch and distributed them on GPU clusters ( [code](#))
- Computed various measurements in CARLA simulator with Python and C++; developed data collection CLI
- Implemented affordance learning in urban autonomous driving; tested conditional learning approach

### UCI Department of Physics and Astronomy

*Physics Tutor, Full Stack Developer*

Irvine, CA  
Jul 2018 - Oct 2018

- Maintained a Canvas-like application on GCP which was used by 300+ students the following quarter
- Developed the Web UI under React framework; integrated third party applications such as Quill
- Improved the security by discovering and fixing a vulnerability of the legacy system caused by a hidden API

## RESEARCH

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### Satellite Hydrology Bits Analysis And Mapping

*Group Leader, Undergraduate Researcher*

Irvine, CA  
Jan 2018 - Dec 2018

- Computed hydrological anomaly by analyzing data from GRACE satellites with Dr. Cedric H.David(JPL, NASA)
- Led a team of four, gave weekly assignments and feedback ([sample](#)), hosted meetings and coordinated tasks
- Added cross-platform compatibility by Docker and native scripts based on OS (Linux/Windows/OS X)
- Improved the CI process by supporting py2/3 compatibility, maintaining dependencies and writing test scripts

### Electron Identification - ATLAS Research

*Undergraduate Researcher*

Irvine, CA  
Jul 2018 - Present

- Worked with Prof. Daniel Whiteson on electron identification; added Windows support for MadGraph5
- Set up Linux clusters to generate high volume of particle collision simulation data with MG5+Pythia+Delphes
- Wrote multiple Python and C++ scripts to analyze and visualize the simulation data with ROOT

## ACCOMPLISHMENTS

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**Ranked #19 in IEEEExtreme Competition, U.S. (top 5% worldwide out of 4049 teams)** Oct 2018  
**Eta Kappa Nu Member (academic honor society)** Dec 2018  
**Completed 92 Units with 3.92 GPA in freshman year (Dean's Honors List)** Sep 2016 - Jul 2017

## PROJECTS

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**HealthHelper:** IoT device monitoring and encouraging workout with Arduino and Raspberry Pi

**Scheca:** Web app to visualize UCI course schedule and send a email notification when the course is available

**MESA:** React-native app to evaluate students' mental health and recommend activities to cheer them up

## RELEVANT COURSES AND SKILLS

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**Courses:** Neural Networks, Machine Learning, Advanced Algorithms, Computer Network, Signal Processing, Particle Physics, Relativity & Blackhole, Experimental Physics, Quantum Mechanics

**Skills:** Data Analysis, ROOT, CI, Web Dev, React, GCP, Docker, Tensorflow, PyTorch, Haskell