Daohang (Tony) Tong

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EDUCATION

The University of Texas at Austin Jan 2022 - Jan 2024
Master of Computer Science Online (with a focus on ML)

University of California, Irvine Sep 2016 - Sep 2020
Double Majors: B.S. Computer Science, B.S. Physics
Honor: Deans List for Academic Year 2016-2017 (Completed 92 Units with a GPA of 3.92) and 2018-2019

HONORS

Phi Beta Kappa, Sigma Pi Sigma, Eta Kappa Nu Member
Ranked #19 in IEEExtreme Competition, U.S. (top 5% worldwide out of 4049 teams) Oct 2018

PUBLICATION

Learning to Identify Electrons Nov 2020
Collado, J., Howard, J.N., Faucett, T., Tong, T., Baldi, P., Whiteson, D.
Accepted in Physical Review D., arXiv preprint (arXiv:2011.01984)

WORK EXPERIENCE

Digerini Irvine, CA
Lead Developer; Supervisor: Richard Brazill Jan 2021 - Present

- Invented key algorithms for a provisional patent application to battle against phone call scams; Responsible for architectural road-maps for both ML and full-stack based on business visions
- Developing an iOS app with React Native and Python Django with MongoDB that are deployed on AWS
- Building a prototypical dilated convolutional neural network to perform few-shot learning on audio data
- Leading a team of five developers with Agile Scrum; s

Fixstars Solutions Irvine, CA
Deep Learning Engineer Intern; Supervisor: Takuro Iizuka Apr 2019 - Jun 2019

- Computed the 13 measurements (e.g. distance between cars) in CARLA simulator with Python and C++; developed a command line interface to automatically collect data (fixstars/ALUAD)
- Developed multiple deep neural networks using PyTorch and distributed them on GPU clusters
- 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 Irvine, CA
Tutor, Full-stack developer; Supervisor: Prof.Peter Taborek Jul 2018 - Dec 2018

- Developed an intelligent quiz system with python and ReactJS which supports online editing, publishing quiz, generating printed exam and analyzing students' data which was used by 300+ students
- Edited and solved over 500 undergraduate level physics problems using Mathematica and LaTeX

RESEARCH EXPERIENCE

Physics Inspired Machine Learning - ATLAS Experiment UCI & CERN
Jr. Specialist; Advisor: Prof.Daniel Whiteson Sep 2020 - Present

- Developing normalizing flow generative models to model complex QCD background with physical constraints
- Building graph neural networks with PyTorch to improve the efficiency and accuracy of symbolic regression
- Constructing group equivariant neural network with symmetry constraints to be more efficient and interpretable

Electron Identification - ATLAS Experiment UCI & CERN
Undergraduate Researcher; Advisor: Prof.Daniel Whiteson Jul 2018 - Nov 2020

- Built dockers and singularity images to distribute the simulation code on UCI high performance computing cluster to generate and validate simulation data based on ATLAS Detector (TDHTTTT/EID)
- Assisted a graduate student in realizing algorithms using C++ to generate jet images from the raw data
- Developed and trained convolutional neural networks with Tensorflow to distinguish electrons from background events based on jet images
- Improved the identification AUC compared with the state-of-the-art method based on high-level variables

PROJECTS

Quantum Enhanced GAN for HEP Feb 2020 - May 2020

- Constructed a quantum enhanced GAN with a quantum circuit born machine as the memory layer (QC-UCI)
- Experimented the novel quantum enhanced GAN on real quantum devices with open source HEP dataset
- Ranked top 20 in QHack and awarded $4000 AWS credits

Minecraft Navigation RL Agent (CS175 Project in AI) Sep 2019 - Dec 2019

- Built and trained an agent to navigate in Minecraft with generative adversarial imitation learning
- Improved the training efficiency by using expert demo data and hyperparameter search (TDHTTTT/RM)

Muon Identification with Unsupervised ML (CS172B Deep Learning) Jan 2019 - Mar 2019

- Implemented multiple model agnostic unsupervised machine learning techniques such as variational autoencoders and generative adversarial models to identify prompt muons (TDHTTTT/MID)
- Developed weakly unsupervised models such as dense autoencoders and CNN autoencoders that are trained only on background events and can be used to search for multiple signal processes

OTHER PROJECTS & ACTIVITIES

2021

Helped Digerini's market research and developing a business plan; Ranked #3 in UCI New Venture Competition

2020

Completed all tasks in 2nd IBM Quantum Challenge; ranked top 10% among 1000+ participants

Got top 3 best solutions in QOSF mentorship screening test out of 100+ submissions (TDHTTTT/learn-bell)

2019

Founded Quantum Computing Club at UCI, gave lectures and invited professors to introduce related research

Built a IoT device monitoring and encouraging workout with Arduino and Raspberry Pi

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

Developed a React-native app to evaluate students' mental health and recommend activities to cheer them up

SKILLS

Programming Languages: Python, C/C++, JavaScript, Bash Shell, Haskell, Mathematica

Tools: PyTorch, Tensorflow, Docker, Django, React, React Native, AWS (EC2, S3, SageMaker, Braket), GCP, MongoDB, Root, LaTeX