John **Dang**

Computer Science Student · AI / ML Researcher · Software Engineer

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Education

University of California, Los Angeles (UCLA)

Los Angeles, CA

B.S. in Computer Science, GPA: 3.8, Junior Class Standing

Sep. 2018 - Jun. 2021

- Achievement Scholarship Recipient, Association for Computing Machinery (AI Projects Officer), Upsilon Pi Epsilon (CS Honor Society)
- UCLA Relevant Coursework: Natural Language Processing (Graduate Level), Neural Networks and Deep Learning, Probabilistic Decision Making and Reinforcement Learning, Artificial Intelligence, Machine Learning, Computer Vision, Data Mining, Algorithms and Complexity, Data Structures and Algorithms, Object-Oriented Programming, Software Construction, Probability Theory, Linear Algebra, Multivariate Calculus, Discrete Structures, Statistical Reasoning, Research, Computer Organization
- Independent Online Coursework: Machine Learning (Stanford/Coursera), Deep Learning (deeplearning.ai/Coursera), Deep Reinforcement Learning (UC Berkeley)

Research

Causal Transfer Learning and Reinforcement Learning

VCLA Lab at UCLA and CARA Inc.

Advisor: Professor Song-Chun Zhu (UCLA Computer Science and Statistics Departments)

May. 2019 - Present

- Working jointly under Center for Vision, Cognition, Learning, and Autonomy (VCLA) lab at UCLA and International Center for AI and Robot Autonomy Inc. (CARA) non-profit corporation.
- Researching algorithms for getting agents to learn causal relationships in complex environments. Currently exploring novel information-gain, program synthesis, grammar induction, and probabilistic programming approaches for exploration that enables causal discovery.
- Researching ways to combine causal discovery, causal models, and counterfactual reasoning with reinforcement learning to enable agents to better transfer between multiple different, but related tasks without needing large amounts of data.

Deep Learning for Mobile Medical Microscopy

Ozcan Research Group / HHMI

Advisor: Professor Aydogan Ozcan (UCLA Electrical Engineering Department and HHMI)

Oct. 2018 - Jun. 2019

- Work on Howard Hughes Medical Institue (HHMI) and National Science Foundation (NSF) project under Ozcan Research Group for capillary force driven bead agglutination flow assay for point of care with lens-free microscopy and deep learning,
- Developed deep learning system for quick, mobile, and accurate protein particle analysis of blood sample images for disease diagnosis.
- Custom Convolutional Neural Network system achieved **tenfold improvement** over traditional methods in efficiency on embedded devices.
- Presented poster of work, at Howard Hughes Medical Institute Day Undergraduate Research Conference:
  John Dang, David Wang, Qianwen Zhong, Yi Luo, Hyouarm Joung, Aydogan Ozcan. "Fast Particle Analysis Using Machine Learning," *HHMI Day 2019.*

Work Experience (Engineering)

Center for Vision, Cognition, Learning, and Autonomy (VCLA) / International Center for AI and Robot Autonomy Inc. (CARA)

Los Angeles, CA

Undergraduate Student Researcher

May. 2019 - Present

- Developing VRGym, an AI research platform for training and evaluating agents in 3D environments **(Unreal Engine/ROS/C++/Python)** for causal transfer learning and reinforcement learning research projects. VRGym platform will be open-sourced soon.
- Designed and implemented automatic structured, stochastic 3D scene generation including integration with Shapenet and Partnet 3D model datasets. Wrote scripts for automated import and conversion of raw 3D model files into Unreal Engine assets.
- Integrating **Pyro**, a **Pytorch**-based probabilistic programming language for probabilistic inference in stochastic VRGym environments.
- Demonstration of VRGym work was presented by Professor Song-Chun Zhu during an invited talk at **World AI Conference 2019** in Shanghai.

Sike Insights (Kleiner Perkins Backed Startup)

Los Angeles, CA

Deep Learning Engineer

Oct. 2018 - Oct. 2019

- Created deep learning model for five-factor OCEAN personality trait extraction from text for enabling client companies' to better understand employees. Model predicted 0.0-1.0 valued personality traits **within 0.015**. Utilized state of the art natural language processing algorithms.
- Designed and implemented data infrastructure, including storage on **AWS** Simple Storage Service and Relational Database Service **(MySQL)**.
- Ran multi-GPU distributed **Tensorflow** model training on AWS Elastic Compute Cloud, and model deployment on AWS Elastic Beanstalk.

Ozcan Research Group (ORG) / Howard Hughes Medical Institute (HHMI) *Los Angeles, CA*

Undergraduate Student Researcher *Oct. 2018 - Jun. 2019*

- Trained, evaluated, and tuned deep learning models with **Tensorflow**. Ran experiments to evaluate various research ideas and visualize results.
- Utilized Tensorflow Lite, model weight quantization and various other efficiency optimizations. Optimizations allowed model to run on Raspberry Pi embedded device, meeting hardware constraints and interfacing with previous work in lab on building lens-free mobile microscopes.

Logos News LLC. *Los Angeles, CA*

Software Engineering Intern *Oct. 2018 - Dec. 2018*

- Developed iOS app in for diverse, crowd-sourced, and personalized news platform **(Swift)**. Performed various app bug fixes and refactoring.
- Implemented article text highlighting feature, enabling text-specific social interaction, discussion, and bias ratings.
- Redesigned Firebase database structure and wrote new Google Cloud Functions, lowering data processing and app loading times **(Javascript)**.

Honors & Awards

2019	**Member,** UCLA Upsilon Pi Epsilon Computer Science Honor Society	*Los Angeles, CA*
2018	**Recipient,** UCLA Achievement Scholarship	*Los Angeles, CA*
2018	**Winner,** EV Hacks III Most Useful Hack	*San Jose, CA*
2018	**Winner,** EV Hacks III Best App	*San Jose, CA*

Skills

Programming	Python, C++, C, Java, Javascript, Matlab, HTML, CSS, Bash, Octave, Swift, SQL
Technologies	Tensorflow, Pytorch, Git, Github, Pyro, Keras, SKLearn, OpenAI Gym, AWS, ROS, Firebase, Unreal Engine, LaTeX
Languages	English, Vietnamese

Projects and Extracurriculars

UCLA ACM AI Internal Project: DeepFake Detection

AI Projects Officer and Project Manager

- UCLA Association for Computing Machinery (UCLA ACM) is UCLA's largest undergraduate computer science student organization. Currently, I am leading one of our internal AI projects.
- Leading a team of UCLA undergraduate students in building systems for detecting synthetic images and videos of people. Will submit to Deepfake Detection Challenge in coming months.

Sincerely, AI

Developer (SB Hacks 2019)

- Trained **Tensorflow** deep learning model for detection of insincere questions using NLP. Achieved **96% accuracy and 0.7 F1-score** on Quora Insincere Questions Dataset (over 1.3 Million data samples). Utilized transfer learning and model hyperparameter fine-tuning.
- Deployed model on Django web server for use with Chrome Extension that determines sincerity of highlighted text on webpage **(Python)**.

Perspective

Developer (EV Hacks III)

- Developed **Java** web app that allows user to read two news articles side by side that are likely to differ in perspective on the user's search query.
- Integrated Bing News Search API for article retrieval and scraped web for bias data for determining likelihood of articles differing in perspective.