THOMAS HUANG

Curriculum Vitae

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RESEARCH INTERESTS

Deep learning and its application to computer vision and generative models.

EDUCATION

Sep. 2015 – May 2019 (expected)	**University of Michigan, Ann Arbor**

B.S.E in Computer Science and Data Science
- Cumulative GPA: 3.98/4.0, Major GPA: 4.0/4.0
- Relevant Courses: Machine Learning, Reinforcement Learning, Computer Vision, Web Systems, Artificial Intelligence, Operating Systems, and Data Structures and Algorithms
- Advisors: Prof. Dmitry Berenson (ARM Lab), Prof. Honglak Lee (AI Lab), and Xiaoning Jin (S.M. Wu Manufacturing Research Center)
- Honors and Awards: Dean's Honor List (Fall'15, Winter & Fall'16, Fall'17, Winter'18), University Honors (Winter'16, Fall'17, Winter'18), James B. Angell Scholar ('18)

PUBLICATIONS

1. Seunghoon Hong, Xinchen Yan, **Thomas Huang**, Honglak Lee**,** *Learning Hierarchical Semantic Image Manipulation through Structured Representations*, Advances in Neural Information Processing Systems (NeurIPS), Montreal, Canada, 2018. (Acceptance rate: 1011/4856 = 20.8%)

RESEARCH EXPERIENCE

Apr. 2018 – Current	**Undergraduate Research Assistant**, AI Lab, University of Michigan

- Advisor: Prof. Honglak Lee
- Worked on the project on object-level image manipulation using a novel deep hierarchical generative framework as a participant in the Summer Undergraduate Research in Engineering (SURE) program. Evaluated performance, explored applications, and demonstrated the capabilities of our proposed framework. Implemented the interactive image-editing demo, an interface that allows users to edit images by manipulating objects in the images. Worked on data-driven image editing, which utilizes generations from our framework for data augmentation.
- Currently leading a new research project on applying deep generative models to conditional music generation, i.e., generating accompaniment to a given piece of music.

Jan. 2018 – Apr. 2018	**Undergraduate Research Assistant**, ARM Lab, University of Michigan

- Advisor: Prof. Dmitry Berenson
- Worked on a project of using deep learning methods to infer the complete shape of objects given only a partial view. Successfully built a pipeline for generating training data and integrated a shape reconstruction network with a robot. Wrote an extensive report that described the methods used, results and findings, and future directions of the research. Gave an invited presentation on this project to over 100 undergraduate students in the Intro. to Machine Learning course.

Apr. 2016 – Sep. 2016	**Research Intern**, BioInMech Lab, Ritsumeikan University, Japan

- Advisor: Prof. Shugen Ma
- Developed a framework for communication between Mathematica and hardware interfaces for robots to be used by other researchers, with a focus on extensibility and ease of integration.

Sep. 2015 – Apr. 2016	**Undergraduate Research Assistant**, University of Michigan

- Advisor: Xiaoning Jin
- Researched the use of sound sensors to detect leakage in pipes. Utilized LabVIEW to collect experimental data and analyzed the data using analytical tools in MATLAB.

WORK EXPERIENCE

May 2017 – Aug. 2017	**Software Engineering Intern**, Salesforce, San Francisco

- Pioneered the integration of a popular social media software (WeChat) with Salesforce's platform using Python and Javascript to satisfy customer needs.
- Presented the prototype to C-level executives of a corporate client.
- Paved the way to an official integration that was recently announced.

EXTRACURRICULAR ACTIVITIES

Sep. 2015 – Apr. 2018	**UM::Autonomy**, University of Michigan

- Leader of the Artificial Intelligence (AI) Team for two years.
- Constructed a fully autonomous robot boat every year to compete at the annual RoboBoat competition. Supervised AI tasks, including data collection, perception (computer vision), and control systems. Worked on buoy detection and tracking, sign detection, path planner, and an automatic sensor testing framework.

Sep. 2016 – Current	**Eta Kappa Nu, EECS Honor Society**, University of Michigan

TEACHING

Sep. 2018 – Current	**EECS 445: Introduction to Machine Learning**, University of Michigan
Jan. 2018 – Apr. 2018	**EECS 445: Introduction to Machine Learning**, University of Michigan

SELECTED PROJECTS

Sep. 2017 – Dec. 2017	**ICLR 2018 Reproducibility Challenge**, University of Michigan

- Final course project for EECS 498: Reinforcement Learning
- Reproduced the results from the paper "Curiosity-driven Exploration by Bootstrapping Features", which was submitted to ICLR 2018. Implemented the entire model in TensorFlow from scratch. The report and code can be found on my Github.

Sep. 2017 – Dec. 2017	**Front-end Collision Prevention System**, University of Michigan

- Final course project for EECS 442: Computer Vision
- Created a system to be incorporated into dash cameras to automatically detect cars suddenly breaking/slowing down in the front. Used the Single Shot MultiBox Detector (SSD) for the detection of cars and a sequence of HSL thresholding, morphological closure, and blob detection for detecting break lights. Used a combination of both detections to make the final prediction. The results and report can be found on my website.