YIRAN XU

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EDUCATION BACKGROUND

Ph.D. in Computer Engineering Aug. 2020 - Present
Virginia Tech, Blacksburg, VA, USA **GPA: ongoing**

M.S. in Electrical and Computer Engineering Sept. 2018 - June. 2020
Track: Intelligent Systems, Robotics and Control
University of California, San Diego, CA, USA **GPA: 3.75/4.00**
Related courses: Computer Vision, Statistical Learning , Sensing & Estimation in Robotics, Planning & Learning in Robotics, Stochastic Processes in Dynamic Systems, Random Process, Statistical Natural Language Processing

B.E. in Electrical Engineering Sept. 2014 - Jun. 2018
South China University of Technology (SCUT), Guangzhou, China **GPA: 3.81/4.00**

RESEARCH EXPERIENCES

Computer Vision and Deep Learning:

Research Assistant, UC San Diego, CA, USA May. 2020 - Present
Monocular 3D Object Detection with Radar Data (ongoing)
Advisor: Nuno Vasconcelos

- Implemented Deep3DBox as a baseline for 3D object detection on KITTI.
- Embedded Radar data from NuScenes as correction to mitigate the ambiguity in monocular 3D detection.

Research Assistant, UC San Diego, CA, USA Nov. 2019 - Mar. 2020
Self-Driving with Video Understanding
Advisor: Nuno Vasconcelos

- Used I3D model to encode video data of Self-Driving.
- Used hierarchical output for data imbalance.
- Collected more data from Waymo dataset.
- Implemented modified object-centric network on videos to plan the future action and explanation and improved the result compared to the single image input.

Research Assistant, UC San Diego, CA, USA Mar. 2019 - Nov. 2019
Explainable Action Decision in Self-Driving
Advisor: Nuno Vasconcelos

- Collected data from different Self-Driving datasets and annotated them with action and explanation. Proposed a new Self-Driving task and new dataset BDD-OIA.
- Proposed an object-centric network for action decision and explanation.
- Achieved 73.4% accuracy with proposed network.
- Accepeted as a CVPR2020 paper.

Data Visualization and Singal Processing:

Research Assistant, SCUT, Guangzhou, China Jan. 2018 - June 2018
Visualization for Oscillations in Power System
Advisor: Junbo Zhang

- Used signal processing method and Stochastic Subspace Identification (SSI) to identify electric power systems modes and modals.
- Designed a metric to evaluate the oscillation intensity within the system and visualized the oscillation within the system.
- Earned Outstanding Undergraduate Thesis award.

TEACHING EXPERIENCE

Teaching Assistant, ECE 6524/CS 6524 Deep Learning — Aug. 2020 - Dec. 2020
Teaching Assistant, ECE 276A Sensing & Estimation in Robotics — Jan. 2020 - March 2020

PUBLICATIONS

Yiran Xu, Xiaoyin Yang, Lihang Gong, Hsuan-chu Lin, Tz-ying Wu, Yunsheng Li, Nuno Vasconcelos. Explainable Object-induced Action Decision for Autonomous Vehicles, CVPR 2020.

Yiran Xu. The Design and Simulation of A Buck-Boost Converter Based on PSIM. 2018 Information Recording.

TECHNICAL SKILLS

Programming: Python, C/C++, MATLAB
Software & Tools: OpenCV, Linux, Rhinoceros, LaTeX, Kubernetes.
Deep Learning Frameworks: Pytorch, Tensorflow

PROFESSIONAL EXPERIENCE

Eaton Corporation, Shenzhen, China — July 2018 - Jan. 2019
Hardware Engineer

APPLICATION PROJECTS

SLAM using Particle Filter

- Implemented Particle Filter on a Robot to realize SLAM from scratch.
- Three clear maps were drawn from SLAM algorithm.

Visual-inertial SLAM using Extended Kalman Filter (EKF)

- Implemented EKF on KITTI dataset to realize SLAM from scratch.
- Three clear maps were drawn from SLAM algorithm.

Stylistic English Poetry Generation

- used Bi-directional LSTM encoder-decoder with style disentanglement for poetry generation trained on famous English poets collection.
- generated English poetry with specific styles.

HONORS AND AWARDS

1st Class Enterprise Scholarship (top 10%), 2015

1st Class National Innovation Scholarship, 2017

National 2nd Prize in China Undergraduates Mathematical Contest Modeling (CUMCM), 2017

Honorable Mention in MCM/ICM mathmatical modelling contest, 2018

Excellent Intern Scholarship in Eaton Corp., 2018

Outstanding Undergraduate Thesis (top 5%), 2018