

Zhexin Shen

Rm 116, Undergraduate Apartment 5#, East China Normal University, Shanghai, 200241, P. R. China
(+86)13818182249 | jefferyshen1015@gmail.com | [Personal Academic Website](#)

EDUCATION

East China Normal University (ECNU) Shanghai, China
Bachelor of Science in Physics, Major GPA: 86/100 (top 15 %) Sept. 2017-July 2021
Elite Class of Physics (30 students selected from all admitted students entering in 2017)
Core Courses: *Methods of Mathematical Physics (A+), College Mathematics I (99/100 A), College Mathematics II (95/100 A), Linear Algebra (97/100 A), Computer Language and Programming in C (94/100 A), Chaotic Dynamics Foundation and Its Applications in Brain Functions (92/100 A-)*
Shanghai Jiao Tong University (SJTU) Shanghai, China
Exchange Program (one of 3 students selected from Dept. of Phys. & Elec. Sci., ECNU) Jan. 2019-June 2019
Courses: *Computational Physics (A-), Quantum Mechanics, Electrodynamics*

RESEARCH EXPERIENCE

Proficiency Awareness for Mixed Aerial & Ground Robot Teaming | Kent State University | Summer Intern
July 2019-Sept. 2019

Advisor: Rui Liu, Assistant Professor, College of Aeronautics and Engineering, Kent State University

Motivation: The team developed a Multi-Agent Reinforcement Learning algorithm with Proficiency Awareness to improve cooperation of mixed robotics teams in various locations such as forests and plazas.

- Built simulator integrated with heterogeneous vehicle models and multiple scenarios
- Designed action pool of discrete acceleration to control heterogeneous robots
- After training, mixed robotics team with proficiency awareness showed improvements on task success rate and environments adaptation. [\[Lab\]](#) [\[Preprint Paper\]](#)

Simulating Collective Motion with Kilobots | SJTU | Research Assistant Jan. 2019-Present

Advisor: Hepeng Zhang, Professor, School of Physics and Astronomy, Shanghai Jiao Tong University

Motivation: Used kilobots to simulate collective motions commonly seen in natural systems such as schools of fish and flocks of birds.

- Designed kilobots with “phototaxis”
- Designed platform that simulates various environments such as moving light waves, corrugated channels, and asymmetric gears.
- Processed captured images with OpenCV to learn positions and velocities of robots.
- Studied pattern of kilobots and compared it with the pattern of phototactic algae [\[Lab\]](#)

Satellite Laser Ranging | East China Normal University | Research Assistant Oct. 2018-Oct. 2019

Advisor: Guang Wu, Researcher, State Key Laboratory of Precision Spectroscopy, ECNU

Motivation: Researched and applied coincidence photon-counting laser ranging technique on drawing trajectory of a satellite

- Designed a non-local means algorithm that distinguishes signals from noises and controls emitter’s direction of following the satellite

LEADERSHIP AND ACTIVITIES

STEM Program | Cambridge Innovation Center & MIT, Media Lab | Participant July 2018-Aug. 2018

- Developed STEM skills
- Presented final project applying STEM to an entrepreneurial new venture
- Visited the City Science Research Group at MIT Media Lab

SKILLS

Language: TOEFL: 108/120 (Reading 29, Listening 29, Speaking 23, Writing 27)

GRE: 328/340 (Verbal 160, Quantitative 168, Analytical Writing 4)

Programming: Python, MATLAB, C

Tool: ROS & Gazebo, PyTorch, OpenCV, Latex (Overleaf), Robotics toolbox for MATLAB, SolidWorks, ANSYS