Shaoxiong Yao

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Education

University of Illinois at Urbana-Champaign   **Champaign, IL**
PhD Student, Computer Science, GPA: 4.00/4.00   *Aug. 2021 – Present*

University of Michigan   **Ann Arbor, MI**
Bachelor of Engineering, Computer Science, GPA: 3.98/4.00   *Sept. 2019 – May 2021*

Stanford University   **Stanford, CA**
Visiting undergraduate student, GPA: 4.30/4.30   *June 2020 – Aug. 2020*

Shanghai Jiao Tong University   **Shanghai, China**
Bachelor of Engineering, Electrical and Computer Engineering, GPA: 3.89/4.00, Rank: 2/324   *Sept. 2017 – Aug. 2021*

Research Experience

Real time elastic deformable objects tactile model estimation   **Champaign, IL**
Advisor: Prof. Kris Hauser   *Sept. 2021 – Present*
- Developed a novel point-based tactile model of elastic deformable object: volumetric stiffness field(VSF).
- Implemented real time VSF estimation system that run $\geq 20\,\mathrm{Hz}$ with GPU acceleration.
- Estimated VSF predicted tactile response(joint torques) of novel touches at average $\sim 1\,\mathrm{Nm}$ error and achieved at least $\times 2$ higher accuracy compared to baselines.

Learning dynamics model for linear deformable object manipulation   **Ann Arbor, MI**
Advisor: Prof. Dmitry Berenson   *May 2020 – Dec. 2020*
- Reproduced SOTA graph neural network(PropNet) deformable object dynamics model.
- Integrated learned dynamics model with kinodynamics RRT for rope manipulation planning.

Device-Free Indoor Localization and Tomography using RFID Tag Array   **Ann Arbor, MI**
Advisor: Prof. Alanson Sample   *Sept. 2019 – May 2020*
- Implemented RF tomography model to localize human indoor position.
- Used variational autoencoder to enhance localization accuracy.
- Achieved mean localization error $21.5\,\mathrm{cm}$ for moving user in $5.2\,\mathrm{m} \times 6\,\mathrm{m}$ room.

Course Projects

Information Fusion of mmWave Radar and Image Sensors   **Shanghai, China**
Advisor: Prof. Xuyang Lu   *May 2021–Aug. 2021*
- Used radar detections filter proposals in Faster-RCNN, reduced FLOPs by 50% and achieved 0.4 mAP.

Reinforcement Learning Augmented Rapidly-Exploring Random Tree   **Ann Arbor, MI**
Instructor: Prof. Dmitry Berenson   *Jan. 2021–May 2021*
- Demonstrated RL policy can be used as local planner for Bi-RRT and planning time is reduced, code link.

Teaching Experience

Instructional Aid of ROB101 Introduction to Computational Linear Algebra   **Ann Arbor, MI**
Instructors: Prof. Jessy W. Grizzle and Prof. Maani Ghaffari   *Sept. 2020 – Dec. 2020*
- Held weekly office hours and grade assignments and exam papers.
- Designed exam questions and review course projects.

Publication

Shaoxiong Yao and Kris Hauser. "Online Estimation of Point-based Volumetric Stiffness Model Using Joint Torque Sensors", ICRA 2022 2nd Workshop on Representing and Manipulating Deformable Objects, May 23, 2022.

Honors and Awards

- Excellent Graduate of Shanghai 2021, by Shanghai City Ministry of Education
- Outstanding Capstone Design, Sliver award by UM-SJTU Joint Institute, Summer 2021
- James B. Angell Scholar at University of Michigan, 2021
- Dean's Honor List Fall 2019 in College of Engineering at the University of Michigan
- Jackson and Muriel Lum Scholarship at UM-SJTU Joint Institute (4/324), 2019
- Excellent Undergraduate Scholarship (First class, 1%) by Shanghai Jiao Tong University
- Silver Medal (10%) in University Physics Competition of 2018