Xiping Sun

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EDUCATION

University of Illinois at Urbana Champaign

Bachelor of Science in Computer Science (GPA: 3.85/4.00) Honors and Awards:

- Yunni and Maxine Pao Memorial Scholarship
- Ilinois Engineering Outstanding Scholarship
- Dean's List

RESEARCH EXPERIENCE

RoboTouch Lab | University of Illinois

- Advised by: Prof. Wenzhen Yuan
- Social Physical HRI with Fabric-Based Tactile Sensing
 - Evaluated sensor sensitivity, calibrated sensing range, and assessed repeatability through comprehensive testing
 - Developed and curated a physical social gesture dataset by organizing participant studies, recording six distinct gestures, and compiling 900 training samples and 180 testing samples
 - Designed and implemented a Multi-Layer Perceptron (MLP) model to classify social gestures
- Vision Based Tactile Sensor
 - Developed the foundational components of OptiSense Studio using Blender by utilizing Python's ImGui-Bundle
 - Designed and implemented a light optimization pipeline to determine the optimal lighting configuration
 - Conducted testing and performance evaluations on three GelSight sensors

Dept. of Ecology and Environment | NorthEast Agricultural University

• Impact of Biochar on Saline-alkali Soil — Advised by: Prof. Hongyan Wang

- Designed and applied a Random Forest model to investigate correlations between diverse bacterial communities and phosphorus concentrations
- Generated intuitive visualizations to convey complex datasets effectively, improving the clarity and accessibility of findings in the research paper
- Semiconductor-microbial Hybrids Advised by: Ning Hou
 - Contributed to diverse machine learning models to predict interactions within photosynthetic biohybrid systems, demonstrating high apparent quantum yields
 - Presented machine learning results clearly and effectively for inclusion in the research paper

Dept. of Agricultural, Consumer and Environmental Science | University of Illinois

- Placement of resources on city blocks Advised by: PhD Shi Xue
 - Developed an algorithm to allocate four distinct resources across city blocks to achieve optimal production efficiency
 - Researched macroecology in modern urban environments and analyzed the effects of reallocating resource distribution

WORK EXPERIENCE

LifeFoundry, Inc.

Software Engineer, Intern

- Developed and deployed a new transport UI for the dashboard to visualize waypoints and trajectories
- Executed unit tests to verify the connection between front-end and back-end
- Streamlined communication between the front-end and back-end by adding core back-end functionalities
- Integrated the back-end with the server using Kubernetes and Docker, and designed a service log streaming system to handle over 10,000 log entries daily

Dept. of Computer Science | University of Illinois

CS 101 Course Assistant

- Instructed lab sections, conducted in-person office hours, and responded to over 200 students' Python programming questions related to homework, lectures, labs, and exams
- Created and structured lab exercises and homework assignments to enhance student learning

PUBLICATIONS

[1] D. Crowder, K. Vandyck, X. Sun, J. McCann, and W. Yuan, "Social Gesture Recognition in spHRI: Leveraging Fabric-Based Tactile Sensing on Humanoid Robots," in ICRA 2025. (Submitted)

[2] A. Agarwal^{*}, M. A. Mirzaee^{*}, X. Sun, and W. Yuan, "A modularized design approach for vision-based tactile sensors," in *IJRR*. (Submitted)

Fall 2024 Fall 2024

Fall 2021 - Spring 2023

Aug 2021 - May 2025

Urbana, IL

Urbana, IL May 2024 - Sep 2024

Harbin, China

March 2024 - May 2024

Jan 2024 – March 2024

Mar 2024 – May 2024

Champaign, IL | Hangzhou, China

Oct 2023 - May 2024

Urbana, IL

May 2023 - Aug 2023

Urbana, IL

Aug 2022 – Present

[3] N. Hou, Y. Tong, M. Zhou, X. Li, X. Sun, and D. Li, "New Strategies for constructing and analyzing semiconductor photosynthetic biohybrid systems based on ensemble Machine learning Models: Visualizing complex mechanisms and yield prediction," Bioresource Technology, pp. 131404–131404, Aug. 2024, doi: https://doi.org/10.1016/j.biortech.2024.131404.
[4] W. Zhao, H. Zhao, X. Sun, and H. Wang, Y. Sun, Y. Liang, and D. Wang, "Biochar and wood vinegar altered the composition of inorganic phosphorus bacteria community in saline-alkali soils and promoted the bioavailability of phosphorus," Journal of Environmental Management, vol. 370, p. 122501, Nov. 2024, doi: https://doi.org/10.1016/j.jenvman.2024.122501.
[5] Z. Fang, S. Xue, Q. Zhou, M. Ali; R. Xu, J. Xu, T. Ding, J. Wang, Z. Huang, X. Sun, Y. Bai. "Framework of land use planning for an energy producing city of Northwest China based on water-energy-food nexus," Journal of Cleaner Production, vol. 451, pp. 142126–142126, Apr. 2024, doi: https://doi.org/10.1016/j.jelepro.2024.142126.

PROJECT WORK

End-to-End Autonomous Driving with Imitation Learning

- Worked on PID controllers, pedestrian detection, and emergency brake nodes using ROS
- Developed a CNN with YOLO-P to replicate driver behavior and collected video data utilizing ROS video packages

Art Style Classification and Transfer

- Constructed a CNN to implement image style transfer and successfully replicated the paper's model
- Generated different styled images and collected images to create a database for training
- Designed a classification model to evaluate the accuracy of the CNN with differently styled images and refine its performance

Audio Garden

- Developed back-end functions integrated with the Google Cloud database
- Managed user data and popular songs in the database using SQL for storage and updates
- Created a front-end interface to display popular songs and visualize user selections

Find Classmates

- Designed user interfaces for home, profile, login, chat, course description, and other pages using Figma
- Developed front-end pages, including home, login, and profile, using React.js, and implemented unit tests to ensure consistency between front-end input and back-end data

SKILLS

- Programming Languages: Python, C++, C, Java, SQL
- Software Packages: ROS, Tenserflow, PyTorch, OpenCV

LEADERSHIP EXPERIENCE

Chinese Engineering Student Association

Vice President

- Co-founded the CESA Alumni Association at the University of Illinois at Urbana-Champaign. Organized three alumni sharing sessions covering topics such as four-year university planning, on-campus resource sharing, and experiences with internships and research applications, attracting a total of 300 attendees
- Hosted an annual freshman meeting with participation from over 200 international students, and coordinated activities such as airport pick-ups, major selection discussions, and events showcasing traditional Chinese culture

VOLUNTEER EXPERIENCE

Sustainable Student Farm

Member

- Constructed over 30 shelves to support the growth of plants such as cucumbers
- Cultivated and harvested various plants, including tomatoes, peppers, and cucumbers
- Sold harvested produce at the Quad Market and used the money to purchase new seeds

Aug, 2023 – Dec, 2023 lel

Jan, 2024 – May, 2024

Jan, 2023 - May, 2023

Aug, 2022 - Dec, 2022

Aug, 2021 - May, 2024

Aug, 2021 – Dec, 2023