Victoria Yang (Ya-Ting Yang) - MASc., EIT.
User Research, Human Factors, R&D for Robotics/HCI/HRI
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Profile Summary

- Specialized in social robotics, human-robot interaction (HRI), robot-assisted language learning (RAL, RALL), human factors.
- Comprehensive robotics development skills, covering hardware, software, system architecture and integration.
- Proven track record in conducting user research to enhance HRI design and application.
- Experienced in cross-discipline collaboration for real-world robotics solutions that combine engineering sciences with social sciences and psychology for human-centered design.
- Proficient in a wide array of technical tools and programming languages for robotics software development, and analysis.
- Strong foundation in mechatronics, mechanical and civil engineering principles.
- Demonstrated leadership in academic and professional settings, managing projects and teams with a proactive and adaptive approach to perform, problem-solve and innovate.

Core Technical Competencies

- Programming Languages: Python, C++, Swift, Dart, Javascript, JSX, R
- Robotics & Hardware: ROS, Dynamixel Motors, Raspberry Pi, Arduino, STM32 Nucleo, Micropython
- UI/UX Design & Web Development: SwiftUI, Flutter, Figma, React.js
- Systems & Integration: Ubuntu, Linux, Amazon Web Services
- Analysis, Design Tools & Software: Jupyter Notebook, R, Matlab, Solidworks, AutoCAD, SAP 2000, STAAD, Mathcad, ArcMap, MTS Test Suite, TES
- Engineering Design Methods: User-centered design, sampling, performance & design testing, conditioning, testing apparatus and design codes & standards, field surveying
- Standards & Manuals: ASTM, AASHTO, CISC (CSA S6:19, S16-14, A23.3-19), MTO (OSIM, structural manual)

Publications / Presentations / Awards

- IEEE/RAS 2023 IDEA Travel Award for attending 2023 Humanoids Conference fully funded.
- Submitted full conference paper to 2024 International Conference in Social Robotics (ICSR).
- Submitted journal paper for the International Journal of Social Robotics (SORO), "SORO-D-24-00084".
- Presented a poster at the University of Waterloo's 2023 Waterloo Robotics Day. Event details.
- Receiver of Karlsruhe House of Young Scientists (KHYS) Aspirant Grant at Karlsruhe Institute of Technology (KIT). Grant details.

Experience

Robotics & AI for Assistive Technologies – Karlsruhe Institute of Technology, Germany   May. 2024 – June. 2024

- Visiting researcher as holder of Karlsruhe House of Young Scientists (KHYS) Aspirant Grant (Doctoral) at research group SARAI in IAR lead by Prof. Barbara Bruno. Main contributing member of interdisciplinary projects (early stage) as follows:
- Funded Project "KIT Future Fields - 'Social Robot Policemen' for the Coordination of Vulnerable Road Users and Cooperative Autonomous Vehicles (V2X4Robot)" explores integrating humanoid robots to enhance road safety by mediating between automated vehicles and pedestrians. The project focuses on developing methods for traffic maneuver specification, vehicular communication, and social interaction to create a prototype robot that assists pedestrians in interactions with autonomous vehicles.
- Funded Project "Reallabor Robotics AI," which aims to introduce robots in kindergartens starting with helping children acquire phonological awareness using the Pepper robot.
- Co-supervision of Bachelors and Master thesis projects in areas of supporting children's phonological awareness, privacy concerns and preservation, behavioral change and motivation, and conversation on fundamental topics in HRI.
- Development of course material for practical implementation for robotics using OpenCV, Mediapipe, ROS, ML. Review, support and marking for lecture material, exercise sessions, and assignments.

Master Thesis on Social HRI & RALL - University of Waterloo   May. 2022 – May. 2024

- Conducted thesis research on the development of a social robot platform for robot-assisted language learning targeted for immigrant children.
- Gained expertise in robot development, including hardware calibration and control, simulation, robot system design, software architecture, Robot Operating System (ROS), networking, and user interface web applications.
- Led and executed ~70 user study sessions independently, demonstrating strong project management and research skills.
- Collaborated with local municipalities and service associations, enhancing communication skills and understanding of HRI design requirements in community settings.
- Affiliated labs: Social and Intelligent Robotics Research Laboratory (SIRRL), Active & Interactive Robotics Laboratory (A.I.R Lab)
- Co-supervised by Kerstin Dauntehaun (SIRRL), Yue Hu (A.I.R Lab)

Teaching Assistant for Microprocessors & Interfacing – University of Waterloo   May. 2023 – Aug. 2023

- Course title: MTE 325 Microprocessor Systems and Interfacing for Mechatronics Engineering, Instructor: Mohammed Nassar
- Responsibilities: Create and host weekly tutorials and office hours; Create and host exam review sessions; Support, guide and oversee students in labs (using STM Nucleo boards and 2-axis machines); Create exam questions and marking schemes; Coordinate logistics for course equipment and course scheduling; Manage communication and relationship between teaching team and students.
- Course content: Synchronization and data flow; interfacing to sensors and actuators; microprocessor system architecture, parallel, serial, and analog interfacing; buses; direct memory access (DMA); interfacing considerations.

Senior Teaching Assistant for First Year Engineering Support – University of Waterloo   Sep. 2021 – Dec. 2021

- Managed 14 teaching assistant (TAs) across 2 first year Mechatronics Engineering courses (MTE100, MTE121) and 3 general first year engineering courses (Calculus, Physis, and Linear Algebra) and facilitated and maintained an organized and diligent team to successfully run course activities (Lectures, Labs, Tutorials, and Design days) and provide the best help students to at the WEEF office during working hours.
- Lead group of TAs such that we ensured all first-year students get the help they need while balancing team resources and making sure each TA meets performance standards rather than relying on TAs who are inherently more diligent or more willing.
- Communicated precisely and succinctly with TAs concisely about activity run-down, responsibilities, and what to do in certain circumstances.
- Maintained a work environment that is open and encouraged communication and discussion.
- Took notice of each TA's individuality and modified communication and interaction approach for diverse types of workflows (that are reasonable) whilst upholding original work policies and maintained performance and positive work attitudes in TAs.
- Planned and coordinated course activities, projects, deliverables, and assessments and delegated responsibilities to the TAs.
- Organized lecture material held tutorials and lead guest lectures.
- Created work schedules and ensured no scheduling conflicts occurred between TA responsibilities. - Communicated between Professor, course tutors and TAs to ensure course content is appropriately delivered.

Structural Engineering in Rehabilitation of Infrastructure- Dillon Consulting, Canada   Jan. 2021 – Apr. 2021

- Key member of bridge abutment bearing replacement project, retaining wall rehabilitation project and oversized load project.
- Used CSA S6:19 and other standards for designing new abutment bearings and stiffeners and assessing moment resistance and fatigue resistance of the composite bridge section and drafted contract drawings using AutoCAD.
- Wrote project proposals, created cost estimates for projects and calculated quantity estimates for construction.
- Met with client on-site and presented scope of work and coordinated deliverable schedule.
- Conducted structure inspections of culverts and bridges and wrote structure condition reports using MTO OSIM.
- Created resource library for structural group to make finding reference material for work convenient and efficient. Also introduced and provided training for other engineering groups to partake on creating their own resource library.

Process Coordinator - Trylon Engineering Services, Canada   Sep. 2019 – Dec. 2019

- Worked process coordination, quality control, client management roles in the engineering design and services department
- Analyzed and created client redlines and feedback records for engineering reports and plan submittals.
- Identified client requests that are out of scope and notified serious errors or concerns to the design team.
- Wrote several site audit reports by reviewing and processing field notes.

- Reviewed engineering submittals and plans for mistakes and inconsistencies in technical information.

Traffic Engineering Assistant - Town of Richmond Hill, Canada   Jan. 2019 – Apr. 2019

- Reviewed site plans, reports, projects, plans and policies for development applications, and EAs.
- Expanded the town's digital data collection network by utilizing software and equipment available.
- Collected and analyzed data by conducting traffic studies and wrote staff reports from study findings and research.
- Participated in the development and progress of the town's transportation masterplan.

Research Assistant for Transportation Engineering Technologies - University of Waterloo   May 2018 – Aug. 2018

- Assisted in research projects about: Recycled Asphalt, Superpave, Self-Healing Asphalt, Polymer Modified Asphalt, Modified Binder, Light Weight Concrete, Pre-cast Concrete road panels, and Reinforced Soil.
- Conducted performance testing and design testing for asphalt concrete, base course, subbase course, and subgrade material samples according to standard specifications (ASTM)
- Proficient in methods of sampling and testing, conditioning, and testing apparatus for asphalt, concrete and soil materials.
- Conducted BRD/MRD, Hamburg Wheel Tracking Test (Rutting), TSRST, Fatigue, Proctor's Test, CRB, Unconfined Compression Strength, Dynamic Modulus, DSR (for Binder properties), Binder Aging, Light Weight Deflectometer (on site), Wetting/Drying & Freeze/Thaw Cycling, Extraction & Recovery, Hydrometer test, Atterberg Limits, and Optimal Moisture Content & Optimal Binder Content.
- Operated testing software (MTS TestSuite), testing frames, environmental chambers, compactors (Gyratory, Shear, Vibratory), Extractor for binder extraction from loose asphalt, and Rotavapor for binder recovery.
- Organized multiple lab's inventory using tool tracking system software (GigaTrak)
- Hosted weekly lab meetings and organized weekly lab activity schedule for machine, tool, equipment, vehicle and space usage
- Went on site (Windsor wind power site) to assess roads' modulus of elasticity with LDW

Education

University of Waterloo, Waterloo, ON

Master of Applied Science (M.A.Sc.)., Mechatronics Engineering

University of Waterloo, Waterloo, ON

Bachelor of Applied Sciences (B.A.Sc.)., Civil Engineering