KARTHIK MAHADEVAN

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RESEARCH INTERESTS

Human-Robot Interaction; Human-Computer Interaction.

EDUCATION

PhD, Computer Science Sep 2019 - Present
University of Toronto, Canada
Supervisors: Dr. Tovi Grossman, Dr. Anthony Tang

MSc, Computer Science Jan 2018 - Aug 2019
University of Calgary, Canada
Supervisors: Dr. Ehud Sharlin, Dr. Sowmya Somanath

BSc, Electrical Engineering Sep 2011 - Jun 2016
University of Alberta, Canada
Class Rank: 3/116

PUBLICATIONS

Conference Proceedings

Karthik Mahadevan, Maurício Sousa, Anthony Tang, and Tovi Grossman. "Grip-that-there": An Investigation of Explicit and Implicit Task Allocation Techniques for Human-Robot Collaboration. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2021. ***Acceptance Rate: 26%.*** **CHI 2021 Best Paper Honorable Mention Award (Top 5%).**

Ming Hou, Karthik Mahadevan, Sowmya Somanath, Lora Oehlberg, and Ehud Sharlin. Autonomous Vehicle-Cyclist Interaction: Peril and Promise. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2020. ***Acceptance Rate: 24%.***

Karthik Mahadevan, Elaheh Sanoubari, Sowmya Somanath, James E Young, and Ehud Sharlin. AV-Pedestrian Interaction Design Using a Pedestrian Mixed Traffic Simulator. In *Proceedings of the ACM Conference on Designing Interactive Systems Factors (DIS)*, 2019. ***Acceptance Rate: 25%.***

Karthik Mahadevan, Sowmya Somanath, and Ehud Sharlin. Communicating Awareness and Intent in Autonomous Vehicle-Pedestrian Interaction. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2018. ***Acceptance Rate: 25%.***

Workshop and Extended Abstracts

Karthik Mahadevan, Sowmya Somanath, and Ehud Sharlin. Enabling Pedestrian Communication with Autonomous Vehicles. In CHI 2018 Workshop *Interacting with Autonomous Vehicles: Learning from other Domains*, 2018. (Position Paper).

Karthik Mahadevan, Sowmya Somanath, and Ehud Sharlin. Can Interfaces Facilitate Communication in Autonomous Vehicle-Pedestrian Interaction? In *Companion Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI)*, 2018. (Pioneers Workshop). ***Acceptance Rate: 31%.***

Karthik Mahadevan, Sowmya Somanath, and Ehud Sharlin. "Fight-or-Flight": Leveraging Instinctive Human Defensive Behaviors for Safe Human-Robot Interaction. In *Companion Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI)*, 2018. (Late-Breaking Report).

Under Submission

Designing Visual Alerts for Semi-Autonomous Vehicles: A Cautionary Tale.

AWARDS

Natural Sciences and Engineering Research Council of Canada 2020
Canada Graduate Scholarship (CGS-D) valued at $105,000 over three years.

Department of Computer Science Entrance Scholarship 2020

Valued at $10,000 over the academic year.

Faculty of Arts and Science Doctoral Recruitment Award 2019
Valued at $15,000 over the academic year.

Department Research Award 2018
Valued at $4,800 over the academic year.

Queen Elizabeth II Graduate Research Scholarship 2018
Valued at $10,800 over the academic year.

HRI Pioneer 2018
Chosen to participate in the highly selective HRI 2018 Pioneers Workshop.

Graduation with Distinction 2016
Awarded for performance during undergraduate program.

Dean's Research Award 2016
Awarded to pursue research in thin-film nanoengineering.

Louise McKinney Post-Secondary Scholarship 2014
Nominated but declined to pursue internship during academic year.

Jason Lang Scholarship 2014, 2013
Awarded based on standing over the academic year.

University of Alberta Academic Excellence Scholarship 2011
Awarded based on high school entrance average.

RESEARCH EXPERIENCE

Research Assistant Sep 2019 - Present
Spatial Interaction Group - DGP, University of Toronto

Research Assistant Feb 2017 - Aug 2019
uTouch Group - Interactions Lab, University of Calgary

Research Assistant Nov 2015 - Apr 2016
Nanoengineering Group, University of Alberta

EMPLOYMENT

Research Intern May 2021 - Sept 2021
Autodesk Research
Mentors: Dr. Qian Zhou, Dr. Fraser Anderson, Dr. George Fitzmaurice

Research Intern Jan 2019 - Jun 2019
Honda Research Institute
Mentor: Dr. Teruhisa Misu

Machine Awareness and Vision Development Researcher Apr 2017 - Dec 2017
Alberta Centre for Advanced MNT Products

Electrical Engineering Co-op Student Sep 2014 - Aug 2015
Suncor Energy

ACADEMIC SERVICE

Associate Chair
CHI 2022 Late Breaking Work
CHI 2021 Late Breaking Work

Student Volunteer Chair
MobileHCI 2022

REVIEWING

Conference

HRI 2021 (Paper, Pioneers Workshop), 2020 (Paper), 2018 (LBR)
CHI 2022 (Paper), 2020 (LBR), 2019 (Paper, LBR, Workshop)
UIST 2020 (Paper)
TEI 2019 (Paper)
ISS 2019 (Paper)
GI 2019 (Paper)
NordiCHI 2018 (Paper)

Journal

THRI (2021)
THMS (2021)
IMWUT (2020)
Transportation Research Part F (2019)
iCOM Journal of Interactive Media (2018)

Outstanding Reviewer Awards

CHI 2022 (1)
HRI 2021 (2)

UNDERGRAD SUPERVISION

Qian (Philip) Chen Sept 2020 - May 2021
Engineering Science, University of Toronto

Ming Hou May 2019 - Sept 2019
Electrical and Computer Engineering, University of Calgary

TEACHING EXPERIENCE

Teaching Assistant Jan 2022 - April 2022
CSC404 - Video Game Design

Teaching Assistant Sept 2021 - Dec 2021
CSC404 - Video Game Design

Teaching Assistant Jan 2021 - April 2021
CSC404 - Video Game Design

Teaching Assistant Sept 2020 - Dec 2020
CSC2536 - Topics in Computer Science and Education

Teaching Assistant Sept 2020 - Dec 2020
CSC404 - Video Game Design

Teaching Assistant Jan 2020 - Apr 2020
CSC2536 - Topics in Computer Science and Education

Teaching Assistant Jan 2018 - Apr 2018
CPSC 203 - Introduction to Problem Solving with Applications

VOLUNTEERING

Student Volunteer May 2021
ACM Conference on Human Factors in Computing Systems (CHI).

Mentor at Her Code Camp Aug 2020
Supported a team of high school students in building a Python game.

uTouch Lab Ambassador Jan 2018 - Aug 2019
Organized visits to the lab from industry and academia around the world.

Student Volunteer Apr 2018

ACM Conference on Human Factors in Computing Systems (CHI).

Student Volunteer Mar 2018
ACM/IEEE International Conference on Human Robot Interaction (HRI).

Engineering Tour Guide Oct 2015
University of Alberta Open House.

Student Note Taker Nov 2012 - Apr 2013
University of Alberta Disability Services.

Electrical Engineering Advisor Oct 2012
University of Alberta Open House.

INVITED TALKS

Human-Robot Interaction with Autonomous Vehicles 2020
SENG310 - University of Victoria, Canada.

Human-Robot Interaction with Autonomous Vehicles 2018
CPSC684 - University of Calgary, Canada.

Autonomous Vehicle-Pedestrian Interaction 2017
Alberta Centre for Advanced MNT Products. Calgary, Canada.

Autonomous Vehicle-Pedestrian Interaction 2017
University College London Interaction Centre. London, U.K.

PRESS COVERAGE

Autonomous Cars: Eyes to Signify, Not to See 2018

Robot Hugs and Cars that Communicate: How Smart Machines and Humans Interact 2018

Self-Driving Cars and Pedestrians 2018

SKILLS

Languages: Python, C#, C++
Simulation Engines: Unity3D, Unreal Engine, Gazebo
Software Frameworks: ROS, Tensorflow
Hardware Platforms: Arduino, Raspberry Pi
Operating Systems: MacOS, Linux, Windows
Design: Adobe Photoshop, Illustrator, Premiere Pro
Word Processing: Office Suite, LaTeX