Ruchen Wen

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Postdoctoral Research Associate
University of Maryland, Baltimore County

Research Interests

My research focuses on human-robot interaction (HRI), particularly linguistic HRI and robot ethics. I am also interested in (robotics-centric) Computer Science education. My overarching research goal is to develop morally and socially competent robots which can exert positive influence and help preserve a better moral ecosystem between humans and robots. Currently, I am working on enabling robotic moral and social competence with role ethics by proposing a hybrid relational-normative model of robot cognitive processes.

Education

2018 – 2023 **Ph.D., Computer Science**, *Colorado School of Mines*, Advisor: Tom Williams
Dissertation: Context-Sensitive Representations, Reasoning, and Communication for Morally and Socially Competent Robots
Committee: Tom Williams, Tracy Camp, Neil Dantam, Kevin Moore, Ana Paiva, Qin Zhu

2016 – 2018 **M.S., Software Engineering**, *University of Wisconsin-La Crosse*

2013 – 2016 **B.E., Software Engineering**, *South-Central University for Nationalities*

Employment

Aug. 2023 → **Postdoctoral Research Associate**, *University of Maryland, Baltimore County*

Aug. 2018 → May. 2023 **Graduate Research Assistant, Teaching Assistant & Adjunct Faculty**, *Colorado School of Mines*

Honors and Awards

Honors and Awards

2024 **Accepted Participant**, *The 2024 Cyber-Physical Systems (CPS) Rising Stars Workshop*, University of Virginia
Towards Morally and Socially Competent Human-Robot Interaction

2024 **Invited Speaker**, *Microsoft Future Leaders in Robotics and AI: Celebrating Diversity and Innovation Seminar Series*, The Maryland Robotics Center, University of Maryland
Designing language-capable robots for ethical and socially adaptive human interactions

2023 **Rath Research Award Nominee**, Colorado School of Mines
Dissertation: Context-Sensitive Representations, Reasoning, and Communication for Morally and Socially Competent Robots

2023 **Outstanding Graduate Student**, *Department of Computer Science*, Colorado School of Mines

2023 **Best Paper Award Nominee**, *International Conference on Persuasive Technology*, Wen, Kim, Phillips, Zhu & Williams
On Further Reflection... Moral Reflections Enhance Robotic Moral Persuasive Capability

2021 **Accepted Participant**, *Human-Robot Interaction Pioneers Workshop*
Toward Hybrid Relational-Normative Models of Robot Cognition

2019 **Accepted Participant**, *CRA-W Graduate Cohort*

2018 **Best Talk Runner Up**, *Rocky Mountain Celebration of Women in Computing*
Towards a Role-Based Framework for Moral Robots

Honors and Awards to Mentees

2022 **Nichole Starr**, *Outstanding Undergraduate Researcher Honorable Mention*, CRA

Publications

Journal Articles

[J1] Boyoung Kim, **Ruchen Wen**, Ewart J de Visser, Chad C Tossell, Qin Zhu, Tom Williams, and Elizabeth Phillips. "Can robot advisers encourage honesty?: Considering the impact of rule, identity, and role-based moral advice". In: *International Journal of Human-Computer Studies* (2024).

[J2] **Ruchen Wen**, Boyoung Kim, Elizabeth Phillips, Qin Zhu, and Tom Williams. "Comparing Norm-Based and Role-Based Strategies for Robot Communication of Role-Grounded Moral Norms". In: *ACM Transactions on Human-Robot Interaction (T-HRI)* (2022).

[J3] Qin Zhu, Tom Williams, and **Ruchen Wen**. "Role-based Morality, Ethical Pluralism, and Morally Capable Robots". In: *Journal of Contemporary Eastern Asia* (2021).

[J4] Qin Zhu, Tom Williams, Blake Jackson, and **Ruchen Wen**. "Blame-Laden Moral Rebukes and the Morally Competent Robot: A Confucian Ethical Perspective". In: *Science and Engineering Ethics* (2020).

Refereed Conference Papers

[C1] Alyssa Hanson, Nichole Starr, Cloe Emnett, **Ruchen Wen**, Bertram F. Malle, and Tom Williams. "The Power of Advice: Differential Blame for Human and Robot Advisors and Deciders in a Moral Advising Context". In: *Proceedings of the 19th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. 2024.

[C2] **Ruchen Wen**, Francis Ferraro, and Cynthia Matuszek. "GPT-4 as a Moral Reasoner for Robot Command Rejection". In: *Proceedings of the 12th International Conference on Human-Agent Interaction*. 36% acceptance rate, 2024.

[C3] Yifei Zhu, **Ruchen Wen**, and Tom Williams. "Robots for Social Justice (R4SJ): Toward a More Equitable Practice of Human-Robot Interaction". In: *Proceedings of the 19th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. 2024.

[C4] Boyoung Kim, **Ruchen Wen**, Qin Zhu, Tom Williams, and Elizabeth Phillips. "The impact of different ethical frameworks underlying a robot's advice on charitable donations". In: *IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*. 2023.

[C5] **Ruchen Wen**, Alyssa Hanson, Zhao Han, and Tom Williams. "Fresh Start: Encouraging Politeness in Wakeword-Driven Human-Robot Interaction". In: *Proceedings of the 18th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. 25.2% acceptance rate, 2023.

[C6] **Ruchen Wen**, Boyoung Kim, Elizabeth Phillips, Qin Zhu, and Tom Williams. "On Further Reflection... Moral Reflections Enhance Robotic Moral Persuasive Capability". In: *International Conference on Persuasive Technology*. 37.7% acceptance rate, 2023.

[C7] **Ruchen Wen**, Brandon Barton, Sebastian Faure, and Tom Williams. "Unpretty Please: Ostensibly Polite Wakewords Discourage Politeness in both Robot-Directed and Human-Directed Communication". In: *ACM International Conference on Multimodal Interaction (ICMI)*. 32.5% acceptance rate (oral), 2022.

[C8] **Ruchen Wen**, Zhao Han, and Tom Williams. "Teacher, Teammate, Subordinate, Friend: Generating Norm Violation Responses Grounded in Role-based Relational Norms". In: *Proceedings of the 17th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. 24.8% acceptance rate, 2022.

[C9] Cailyn Smith, Charlotte Gorgemans, **Ruchen Wen**, Saad Elbeleidy, Sayanti Roy, and Tom Williams. "Leveraging Intentional Factors and Task Context to Predict Linguistic Norm Adherence". In: *Annual Meeting of the Cognitive Science Society (CogSci)*. 2022.

[C10] Boyoung Kim, **Ruchen Wen**, Qin Zhu, Tom Williams, and Elizabeth Phillips. "Robots as Moral Advisors: The Effects of Deontological, Virtue,and Confucian Ethics on Encouraging Honest Behavior". In: *Companion Proceedings of the 16th ACM/IEEE International Conference on Human-Robot Interaction (alt.HRI)*. 21.7% acceptance rate, 2021.

[C11] **Ruchen Wen**, Mohammed Aun Siddiqui, and Tom Williams. "Dempster-Shafer Theoretic Learning of Indirect Speech Act Comprehension Norms". In: *Proceedings of the 34th AAAI Conference on Artificial Intelligence*. 20.6% acceptance rate, 2020.

[C12] Tom Williams, Daniel Grollman, Mingyuan Han, Ryan Blake Jackson, Jane Lockshin, **Ruchen Wen**, Zachary Nahman, and Qin Zhu. ""Excuse Me, Robot": Impact of Polite Robot Wakewords on Human-Robot Politeness". In: *International Conference on Social Robotics*. 2020.

[C13] Tom Williams, Qin Zhu, **Ruchen Wen**, and Ewart J. de Visser. "The Confucian Matador: Three Defenses Against the Mechanical Bull". In: *Companion Proceedings of the 15th ACM/IEEE International Conference on Human-Robot Interaction (alt.HRI)*. 19% acceptance rate, 2020.

[C14] Ryan Blake Jackson, **Ruchen Wen**, and Tom Williams. "Tact in Noncompliance: The Need for Pragmatically Apt Responses to Unethical Commands". In: *Proceedings of the AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)*. 15% acceptance rate (oral), 2019.

Lightly Refereed and Invited Workshop, Symposium, and Conference Papers

[W1] **Ruchen Wen** and Tom Williams. "Hidden Complexities in the Computational Modeling of Proportionality for Robotic Norm Violation Response". In: *Proceedings of the AAAI Fall Symposium on AI for HRI (AI-HRI)*. 2022.

[W2] Boyoung Kim, **Ruchen Wen**, Ewart J. de Visser, Qin Zhu, Tom Williams, and Elizabeth Phillips. "Investigating Robot Moral Advice to Deter Cheating Behavior". In: *Proceedings of the RO-MAN 2021 Workshop on Robot Behavior Adaptation to Human Social Norms (TSAR)*. 2021.

[W3] **Ruchen Wen**. "Toward hybrid relational-normative models of robot cognition". In: *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction*. 2021, pp. 568–570.

[W4] **Ruchen Wen**, Boyoung Kim, Elizabeth Phillips, Qin Zhu, and Tom Williams. "Comparing Strategies for Robot Communication of Role-Grounded Moral Norms". In: *Companion Proceedings of the 16th ACM/IEEE International Conference on Human-Robot Interaction (HRI): Late Breaking Reports*. 2021.

[W5] Tom Williams and **Ruchen Wen**. "Human Capabilities as Guiding Lights for the Field of AI-HRI: Insights from Engineering Education". In: *AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction (AI-HRI)*. 2021.

[W6] **Ruchen Wen**, Mohammed Aun Siddiqui, and Tom Williams. "Poster: Dempster-Shafer Theoretic Learning of Indirect Speech Act Comprehension Norms". In: *Advances in Cognitive Systems*. Non-archival Poster Presentation. 2020.

[W7] **Ruchen Wen**, Ryan Blake Jackson, Tom Williams, and Qin Zhu. "Towards A Role Ethics Approach to Command Rejection". In: *Proceedings of the 2019 HRI Workshop on the Dark Side of Human-Robot Interaction*. 2019.

[W8] Qin Zhu, Tom Williams, and **Ruchen Wen**. "Confucian Robot Ethics". In: *Computer Ethics - Philosophical Enquiry*. 2019.

Teaching Experience

Fall 2022 **Co-Instructor**, *CSCI/EENG 437/507, Introduction to Computer Vision*
With Tom Williams, Colorado School of Mines

Fall 2021 **Co-Instructor**, *CSCI/EENG 437/507, Introduction to Computer Vision*
With Ryan Blake Jackson, Colorado School of Mines

Spring 2020 **Teaching Assistant**, *CSCI/HASS 432, Robot Ethics*
Taught by Tom Williams, Colorado School of Mines

Spring 2019 **Teaching Assistant**, *CSCI 306, Software Engineering*
Taught by Mark Baldwin, Colorado School of Mines

Fall 2018 **Teaching Assistant**, *CSCI 306, Software Engineering*
Taught by Mark Baldwin, Colorado School of Mines

Guest Lectures

Fall 2024 **Purdue University Northwest**, *"Towards Morally and Socially Competent Human-Robot Interaction"*, CS 46800: Human Robot Interaction

Fall 2024 **University of Maryland, Baltimore County**, *"Machine Learning: Decision Trees and Information, Evaluating ML Models"*, CMSC 471: Introduction to Artificial Intelligence

Fall 2024 **University of Maryland, Baltimore County**, *"Robotics and Human-Robot Interaction"*, CMSC 471: Introduction to Artificial Intelligence

Fall 2023 **University of Maryland, Baltimore County**, *"Context-Sensitive Representations, Reasoning, and Communication for Morally and Socially Competent Robots"*, CMSC 691: Principles of Human-Robot Interaction

Spring 2023 **University of Chicago**, *"Teacher, Teammate, Subordinate, Friend: Generating Norm Violation Responses Grounded in Role-based Relational Norms"*, CMSC 33281: Topics in Human-Robot Interaction

Professional Service

Workshop and Symposium Organization

Symposium Organizer, *Unifying Representations for Robot Application Development (UR-RAD)*

Co-organizers: David Porfirio (U.S. Naval Research Lab), Saad Elbeleidy (Peerbots), Laura Hiatt (U.S. Naval Research Lab), Mark Roberts (U.S. Naval Research Lab), Willie Wilson (Franklin & Marshall College), Ross Mead (Semio), Laura Stegner (University of Wisconsin-Madison). *AAAI Fall Symposium, will be held in Arlington, VA, in November 2024*

Workshop Panel Moderator, *Human-Machine Integration Workshop*

University of Maryland, Baltimore County, held in Baltimore, MD, in August 2024

Workshop Organizer, *Scarecrows in Oz: Large Language Models in HRI*

Co-organizers: Cynthia Matuszek (University of Maryland, Baltimore County), Nick DePalma (Independent Researcher), Ross Mead (Semio), Tom Williams (Colorado School of Mines). *International Conference on Human-Robot Interaction, held in Boulder, CO, in March 2024*

Symposium Volunteer, *The International Symposium on Technological Advances in Human-Robot Interaction (TAHRI)*

held in Boulder, CO, in March 2024

Symposium Organizer, *Unifying Representations for Robot Application Development (UR-RAD)*

Co-organizers: David Porfirio (U.S. Naval Research Lab), Ross Mead (Semio), Laura Stegner (University of Wisconsin-Madison), Laura Hiatt (U.S. Naval Research Lab), Mark Roberts (U.S. Naval Research Lab), Amin Atrash (Amazon Lab126), Nick DePalma (Independent Researcher). *AAAI Fall Symposium, held in Arlington, VA, in October 2023*

Symposium Organizer, *Artificial Intelligence for Human-Robot Interaction (AI-HRI)*

Co-organizers: Zhao Han (Colorado School of Mines), Emmanuel Senft (Idiap Research Institute), Muneeb I. Ahmad (Swansea University), Shelly Bagchi (National Institute of Standards and Technology), Justin W. Hart (University of Texas at Austin), Daniel Hernández García (Heriot-Watt University), Boyoung Kim (George Mason University), Matteo Leonetti (University of Leeds), Ross Mead (Semio), Reuth Mirsky (Bar Ilan University), Ahalya Prabhakar (École Polytechnique Fédérale de Lausanne), Jason R. Wilson (Franklin & Marshall College), Amir Yazdani (University of Utah Robotics Center), Megan L. Zimmerman (National Institute of Standards and Technology). *AAAI Fall Symposium, held in Arlington, VA, in November 2022*

Referee Service

Referee for Journal Articles

ACM Transactions on Human-Robot Interaction (T-HRI)

External Referee for Conference Proceedings

ACM/IEEE International Conference on Human-Robot Interaction (HRI)

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

International Conference on Social Robotics (ICSR)

Late-Breaking Reports of the ACM/IEEE International Conference on Human-Robot Interaction (HRI-LBR)

External Referee for Workshop and Symposia Proceedings

Human-Robot Interaction Pioneers Workshop of the ACM/IEEE International Conference on Human-Robot Interaction (HRI Pioneers)

AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction (AI-HRI)

Professional Society Membership

ACM

AAAI

IEEE

University Service

CS@Mines Graduate Visit Days, Panelist/Volunteer, Colorado School of Mines, 2023

Computer Science Graduate Visit Days, Volunteer, Colorado School of Mines, 2020

Graduate Experience Mentor (GEM) Program, Mentor, Colorado School of Mines, 2019

Computer Science Board of Graduate Students, Member, Colorado School of Mines, 2019

Mentoring

Padraig Higgins (Ph.D., CS, University of Maryland, Baltimore County), 2024-

Kasra Darvish (Ph.D., CS, University of Maryland, Baltimore County), 2023-

Aidan Newell (Masters, CS, University of Maryland, Baltimore County), 2023-2024

Alyssa Hanson (Undergraduate, CS, Colorado School of Mines), 2022–2023

Cloe Emnett (Undergraduate, CS, Colorado School of Mines), 2022–2023

Anjana Radha (High School Summer Scholar, Peak to Peak Charter School), 2022 Summer, *Student, Northwestern University*

Brandon Barton (Undergraduate, CS, Colorado School of Mines), 2021–2022, *Master Student, Applied Mathematics and Statistics ⇀ Ph.D. Student, Physics, ETH Zürich*

Sebastian Fauré (Undergraduate, CS, University of Florida), 2021–2022, *Software Engineer, Amazon Lab126*

Nichole Starr (Undergraduate, CS, Colorado School of Mines), 2020–2021, *Software Engineer Associate, Lockheed Martin*

Katherine Aubert (Undergraduate, CS, Colorado School of Mines), 2020–2021, *Graduate Student*

Levi Ortega (Undergraduate, CS, Colorado School of Mines), 2019–2020, *Software Engineer, Microsoft*

Aun Siddiqui (Masters, MechE, Colorado School of Mines), 2017–2019, *Machine Learning Engineer, Terra Chem Laboratory*

Outreach

Invited Talks and Presentations

Guest Panelist, CPS 367: Artificial Intelligence, Franklin & Marshall College, 2023
Panel discussion on sharing the experiences of individuals from diverse backgrounds pursuing various career paths.

Invited Speaker, *"Fresh Start: Encouraging Politeness in Wakeword-Driven Human-Robot Interaction"*, CS Graduate Student's Seminar, Colorado School of Mines, 2022
Presentation on the HRI 2023 publication [C5].

Presenter, *"How to Move a Robotic Arm"*, "Girls Lead the Way" Conference, Colorado School of Mines, 2022
K-12 interactive presentation on robotic.

Presenter, *"How to Move a Robotic Arm"*, Shelton Elementary Math & Science Night STEM Fair, Shelton Elementary, 2021
K-6 interactive presentation on robotic.

Invited Speaker, *"It's Time to Talk, Humans"*, Computing For Good (C4G) Program, Colorado School of Mines, 2021
K-12 talk on ethics while developing CS projects.

Panelist, *CS Research Workshop*, Google ExploreCSR Hidden Talents Research Project, Colorado School of Mines, 2021
Discussion on pursuing graduate school and research in computer science for undergraduate students who applied for the Hidden Talents program.

Presenter/Panelist, *"MIRROR Lab's Research on Robotics & AI"*, Academic Panel: AI & Robotics Research at Mines, Colorado School of Mines, 2020
Public talk on MIRROR Lab's research.

Presenter, *"How to Train Your Robot (To be Socially and Morally Good)"*, NCWIT Aspirations Event, Colorado School of Mines, 2020
K-12 talk on Human-Robot Interaction and Robot Ethics.

Targeted Programs

Volunteer, Hour of Code, Colorado School of Mines, 2022
Outreach program targeted at K-9 to K-12 students.

Mentor, Google ExploreCSR Hidden Talents Project, Colorado School of Mines, 2020-2021
Google-Funded program for academically talented undergraduate students in U.S. to work with graduate students from the Colorado School of Mines on CS research project.

Selected Press Coverage

Mines Newsroom, *2023*
Research covered in "Women in computer science at Mines are rising stars in research and innovation"

Radical AI Podcast, *2020*, Episode 001
Research covered in "Can a Machine Ever be Moral? Robot Politeness and Persuasion with Tom Williams"
`https://youtu.be/BMOY7I-rKTM`

Mines Newsroom, *2020*
Research covered in "Improving the human-robot relationship, one successful conversation at a time"