Ruchen Wen

rwen@mines.edu
rcpuckwen.github.io

Ph.D. Candidate, Colorado School of Mines
MIRRORLab

Research Interests

My research focuses on human-robot interaction (HRI), particularly linguistic HRI, and robot ethics. I am also interested in emotion understanding and representation and (robotics-centric) Computer Science education. 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*

Honors and Awards

Honors and Awards to Me

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] **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).

[J2] Qin Zhu, Tom Williams, and **Ruchen Wen**. "Role-based Morality, Ethical Pluralism, and Morally Capable Robots". In: *Journal of Contemporary Eastern Asia* (2021).

[J3] 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] **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.

[C2] **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.

[C3] **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.

[C4] **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.

[C5] 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.

[C6] 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.

[C7] **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.

[C8] 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.

[C9] 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.

[C10] 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.

[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.

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"

Professional Service

Workshop and Symposium Organization

Symposium, *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)

International Conference on Social Robotics (ICSR)

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

External Referee for Workshop and Symposia Proceedings

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

Professional Society Membership

ACM

University Service

Computer Science Graduate Visit Days, Volunteer, 2020

Graduate Experience Mentor (GEM) program, Mentor, 2019

Computer Science Board of Graduate Students, Member, 2019

Mentoring

Current Undergraduate MIRRORLab Members

Alyssa Hanson (Undergraduate, CS), 2022–Present

Cloe Emnett (Undergraduate, CS), 2022–Present

Graduated & Past Mentees

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

Brandon Barton (Undergraduate, CS), 2021–2022, *Graduate Student, Applied Mathematics and Statistics*

Sebastian Faure (Undergraduate, CS, University of Florida), 2021–2022

Nichole Starr (Undergraduate, CS), 2020–2021

Katherine Aubert (Undergraduate, CS), 2020–2021

Levi Ortega (undergraduate, CS), 2019–2020

Teaching

Courses Taught

Term	School	Course #	Course Title	Enrollees	Evaluation[3]
Fall 2022[1]	Mines	CSCI/EENG 437/507	Computer Vision	102	TBD
Fall 2021[2]	Mines	CSCI/EENG 437/507	Computer Vision	118	4.0/5.0

[1] Co-taught with Tom Williams

[2] Co-taught with Ryan Blake Jackson

[3] Overall rating for creating a positive learning environment

Teaching Assistance

Term	School	Course #	Course Title	Course Lead
Spring 2020	Mines	CSCI/HASS 432	Robot Ethics	Tom Williams
Spring 2019	Mines	CSCI 306	Software Engineering	Mark Baldwin
Fall 2018	Mines	CSCI 306	Software Engineering	Mark Baldwin

Outreach

Public Talks and Presentations

Invited Speaker, *"Teacher, Teammate, Subordinate, Friend: Generating Norm Violation Responses Grounded in Role-based Relational Norms"*, CMSC 33281: Topics in Human-Robot Interaction, University of Chicago, 2022
Presentation and discussion on the HRI 2022 publication [C4].

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 [C1].

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

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

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.