

ALEXANDRA BREMERS

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Fourth-year PhD Candidate at Cornell Information Science, based at Cornell Tech, NYC, where I am advised by Associate Professor Wendy Ju. My background is in design and artificial intelligence. I combine designing with engineering and human participant studies to study how digital automation can support physical interactions. I am especially interested in how machines can support the feelings of joy and flow that people experience when they make something by hand. Prior to my PhD, I worked as a researcher at Jaguar Land Rover. I have work experience in various cultures and contexts. My approach when designing and researching is varied and interdisciplinary. I expect to graduate in May 2025.

EDUCATION

- 2020- **Cornell University**, Cornell Tech, New York, NY, USA
Ph.D. in Information Science
Specialization: Human-Computer Interaction
Minor: Computer Science
Committee: Wendy Ju (chair), François Guimbretière, Stephen Marschner
Expected graduation date: August 2025
- 2016-2018 **Utrecht University**, Utrecht, The Netherlands
M.Sc. in Artificial Intelligence
Track: Cognitive Processing
Thesis: *Perception of Perspective in Augmented Reality Head-Up Displays*
Advisors: Chris Janssen, Ignace Hooge, Valerian Meijering
- 2013-2016 **Eindhoven University of Technology**, Eindhoven, The Netherlands
B.Sc. in Industrial Design
Graduation Project: *How to embroider a radio*
Advisors: Oscar Tomico, Saskia Bakker
- 2007-2013 **Stedelijk Gymnasium Arnhem**, Arnhem, The Netherlands
Gymnasium (Grammar School)

INDUSTRY RESEARCH EXPERIENCE

- 2023 (summer) **Associate Principal**, Accenture Labs (R&D)
San Francisco, CA, USA

- 2021 (summer) **Research Intern**, Toyota Research Institute
Los Altos, CA, USA (remote)
- 2017–2020 **Human-Machine Interface Researcher**, Jaguar Land Rover
National Automotive Innovation Center, Coventry, United Kingdom

ACADEMIC RESEARCH EXPERIENCE

- 2020– **Graduate Research Assistant**, Future Automation Research Lab
Cornell Tech, Cornell University, New York, NY, USA
Collaborations with Amada AI Innovation Laboratory Ltd., Accenture Labs,
Toyota Research Institute and Nissan Motors.
- 2021 (fall) **Research Visitor**, Robots in Groups Lab
Cornell University, Ithaca, NY, USA
- 2017 (summer) **Research Intern**, NTU IoX Center
National Taiwan University, Taipei, Taiwan

PUBLICATIONS

- Journal Articles Nermin Caber, Jiaming Liang, Bashar I. Ahmad, Simon Godsill, **Alexandra Bremers**, Philip Thomas, David Oxtoby, Lee Skrypchuk. “Driver Profiling and Bayesian Workload Estimation for Adaptive In-Vehicle HMI”. In: *IEEE Transactions on Intelligent Vehicles*. 2023. DOI: <https://doi.org/10.48550/arXiv.2303.14720>.
- Alexandra W.D. Bremers**, Ali Özgür Yöntem, Kun Li, Daping Chu, Valerian Meijering, Christian P. Janssen. “Perception of Perspective in Augmented Reality Head-Up Displays”. In: *International Journal of Human-Computer Studies* (2021), p. 102693. ISSN: 1071-5819. DOI: <https://doi.org/10.1016/j.ijhcs.2021.102693>. URL: <https://www.sciencedirect.com/science/article/pii/S1071581921001117>.
- Full Conference Papers **Alexandra Bremers**, Maria Teresa Parreira, Xy Fang, Natalie Friedman, Adolfo Ramirez-Aristizabal, Alexandria Pabst, Mirjana Spasojevic, Mike Kuniavsky, Wendy Ju. “The Bystander Affect Detection (BAD) dataset for failure detection in HRI”. In: *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2023. DOI: <https://doi.org/10.48550/arXiv.2303.04835>.
- David Goedicke, **Alexandra Bremers**, Sam Lee, Fanjun Bu, Hiroshi Yasuda, Wendy Ju. “XR-OOM: MiXed Reality Driving Simulation With Real Cars”. In: *Proceedings of the ACM International Conference on Human Computer Interaction (CHI)*. 2022. DOI: <https://doi.org/10.1145/3491102.3517704>. URL: <https://dl.acm.org/doi/abs/10.1145/3491102.3517704>.

Datasets

- Alexandra Bremers**, Xuanyu Fang, Natalie Friedman, Wendy Ju. “Data for: The Bystander Affect Detection (BAD) Dataset for Failure Detection in HRI”. In: QDR Main Collection, 2023. DOI: <https://doi.org/10.5064/F6TAWBGS>.
- Demos & Videos Itay Grinberg, **Alexandra Bremers**, Louisa Pancoast, Wendy Ju. “Implicit collaboration with a drawing machine through dance movements”. In: *ACM Symposium on Computational Fabrication*. 2023. DOI: <https://doi.org/10.48550/arXiv.2310.00215>. URL: <https://arxiv.org/abs/2310.00215>.
- Avital Dell’Ariccia, **Alexandra Bremers**, Johan Michalove, Wendy Ju. “How to make people think you’re thinking if you’re a drawing robot”. In: *Proceedings of the 17th ACM Conference on Human-Robot Interaction*. 2022. DOI: <https://doi.org/10.1109/HRI53351.2022.9889638>. URL: <https://ieeexplore.ieee.org/abstract/document/9889638>.
- Under Review & Pre-prints **Alexandra Bremers**, Manaswi Saha, Adolfo Ramirez-Aristizabal. “Situated Conversational Agents for Task Guidance: A Preliminary User Study”. In: (*under review*). 2024.
- Natalie Friedman, **Alexandra Bremers**, Adelaide Nyanyo, Ian Clark, Yasmine Kotturi, Laura Dabbish, Wendy Ju, Nikolas Martelaro. “Understanding the Challenges of Maker Entrepreneurship”. In: (*under review*). 2024.
- Maria Teresa Parreira, Sukruth Gowdru Lingaraju, Adolfo Ramirez-Aristizabal, **Alexandra Bremers**, Manaswi Saha, Michael Kuniavsky, Wendy Ju. “Bad Idea?” *Exploring Anticipatory Human Reactions for Outcome Prediction in HRI*. 2024.
- Alexandra Bremers**, Natalie Friedman, Sam Lee, Tong Wu, Eric Laurier, Malte Jung, Jorge Ortiz, Wendy Ju. “(Social) Trouble on the Road: Understanding and Addressing Social Discomfort in Shared Car Trips”. In: (*under review*) *arXiv:2311.04456*. 2023. URL: <https://arxiv.org/abs/2311.04456>.
- Alexandra Bremers**, Alexandria Pabst, Maria Teresa Parreira, Wendy Ju. “Using Social Cues to Recognize Task Failures for HRI: A Review of Current Research and Future Directions”. In: (*under review*) *arXiv:2301.11972*. 2023. DOI: <https://doi.org/10.48550/arXiv.2301.11972>.
- Natalie Friedman, Asmita Mehta, Kari Love, **Alexandra Bremers**, Awsaf Ahmed, Wendy Ju. *A utility belt for an agricultural robot: reflection-in-action for applied design research*. 2023. arXiv: [2312.14358](https://arxiv.org/abs/2312.14358) [cs.R0].
- Lunshi Zhou, **Alexandra Bremers**, Wendy Ju. “Initiative and Materiality: Exploring Mixed-Initiative Calculators with the Tangible Human-A.I. Interaction Framework”. In: *arXiv:2311.06360*. 2023. URL: <https://arxiv.org/abs/2311.06360>.
- Short Papers Fanjun Bu, **Alexandra Bremers**, Mark Colley, Wendy Ju. “Field Notes on Deploying Research Robots in Public Spaces”. In: *Extended Abstracts of the 2024*

ACM International Conference on Human Computer Interaction (CHI): Late Breaking Work. 2024.

Avital Dell'Araccia, **Alexandra Bremers**, Wen-Ying Lee, Wendy Ju. “Ah! He wants to win!”: Social responses to playing Tic-Tac-Toe against a physical drawing robot”. In: *Adjunct Proceedings of the 2022 ACM International Conference on Tangible and Embodied Interaction: Work-in-Progress.* 2022. DOI: <https://doi.org/10.1145/3490149.3505571>. URL: <https://dl.acm.org/doi/abs/10.1145/3490149.3505571>.

David Goedicke, **Alexandra Bremers**, Hiroshi Yasuda, Wendy Ju. “XR-OOM: Mixing Driving Environments with Virtual Objects Safely”. In: *Adjunct Proceedings of the 2021 ACM International Conference on Automotive Interfaces and Vehicular Applications: Work-in-Progress.* 2021. DOI: <https://doi.org/10.1145/3473682.3480266>. URL: <https://dl.acm.org/doi/abs/10.1145/3473682.3480266>.

Workshop Activity **Alexandra Bremers**, Wendy Ju. “Designing Interactions for Mixed-Initiative Machines: Balancing Automation and Craftsmanship”. In: *1st International Workshop on Worker-Robot Relations at the 19th Annual ACM/IEEE International Conference on Human-Robot Interaction.* 2024.

Natalie Friedman, **Alexandra Bremers**, Bolor Amgalan, Ray LC, AJ Parry, Kari Love, Wendy Ju. “Clothing for Robot Identity”. In: *Robo-Identity: Designing for Identity in the Shared World. Workshop co-located at the 19th Annual ACM/IEEE International Conference on Human-Robot Interaction.* 2024.

Alexandra Bremers, Maria Teresa Parreira, Wendy Ju. “Understanding Bystander Facial Responses to Robot Task Failures with the BAD Dataset”. In: *The Imperfectly Reliable Robot: An interdisciplinary workshop on the role of failure in HRI at the 18th Annual ACM/IEEE International Conference on Human-Robot Interaction.* 2023.

Maria Teresa Parreira, Sukruth Gowdru Lingaraju, Adolfo Ramirez-Aristizabal, **Alexandra Bremers**, Manaswi Saha, Michael Kuniavsky, Wendy Ju. “Bad Idea? Exploring Anticipatory Human Reactions for Outcome Prediction”. In: *NERC Northeast Robotics Colloquium.* 2023.

Alexandra Bremers. “A computer that sketches along with you”. In: *Creativity and Cognition: Graduate Symposium.* C&C '22. Venice, Italy, 2022. DOI: <https://doi.org/10.1145/3527927.3533732>. URL: <https://dl.acm.org/doi/abs/10.1145/3527927.3533732>.

Alexandra Bremers. “How can a robot help people draw?” In: *Companion Publication of the 2021 ACM Designing Interactive Systems Conference: Doctoral Consortium.* DIS '22 Companion. Virtual Event: Association for Computing Machinery, 2022. DOI: <https://doi.org/10.1145/3532107.3532876>. URL: <https://dl.acm.org/doi/abs/10.1145/3532107.3532876>.

Natalie Friedman, Kari Love, **Alexandra Bremers**, AJ Parry, Ray LC, Bolor Amgalan, Jen Liu, Wendy Ju. “Workshop: Designing Functional Clothing for Human-robot Interaction”. In: *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction*. 2021, pp. 703–705. DOI: <https://doi.org/10.1145/3434074.3444870>. URL: <https://dl.acm.org/doi/abs/10.1145/3434074.3444870>.

PRESS COVERAGE

Press Sarah Collins. *Using machine learning to monitor driver workload could help improve road safety*. University of Cambridge. Dec. 2023. URL: <https://www.cam.ac.uk/research/news/using-machine-learning-to-monitor-driver-workload-could-help-improve-road-safety>.

Tom Fleischman. *Mixed reality driving simulator: a low-cost alternative*. Cornell University. Apr. 2022. URL: <https://news.cornell.edu/stories/2022/04/mixed-reality-driving-simulator-low-cost-alternative>.

GRANTS, HONOURS & AWARDS

- Fellowships Google Fellowship Departmental Nominee
Date: 2022
Selected candidate by Cornell University Bowers CIS - Information Science.
- Royal Commission of 1851 Industrial Fellowship
Amount: £90,000
Date: 2020
Fellowship to pursue a PhD at the University of Cambridge Department of Engineering. Declined in order to accept Cornell offer.
- Grants Cornell Graduate School Conference Grant
Amount: \$500
Date: 2024
- Cornell Graduate School Conference Grant
Amount: \$700
Date: 2023
- Finnish Center for AI (HIIT/FCAI) Travel Support Grant
Amount: €3,500
Date: 2022
- ACM Creativity & Cognition Graduate Symposium NSF Student Travel Grant
Amount: \$1,900
Date: 2022
- Cornell Graduate School Conference Grant

Amount: \$700

Date: 2022

Cornell Graduate School Conference Grant

Amount: \$675

Date: 2021

Cornell Tech Backslash Art Microgrant: **Plotting with Conductive Inks.**

Amount: \$500

Date: 2021

Honours &
Awards

CRA-WP Grad Cohort for Women

Invited to conference in San Francisco

Date: 2023

TATA Innovista Global Finalist & JLR Innovista Global Finalist

Date: 2019

Oxford-Cambridge Rising Women in Science and Engineering

Invited to course at Oxford Saïd Business School and Cambridge Madingley Hall

Date: 2018

Bruynzeel Storage Systems, Designing the Office Competition, 2nd Student Prize

Value: €500

Date: 2015

Schoolkrantawards, Best School Paper of The Netherlands (Best Content)

Value: €250

Date: 2012

Schoolkrantawards, Best School Paper of The Netherlands (Best Layout)

Value: €250

Date: 2012

Lions Club Arnhem Arenacum & Stedelijk Gymnasium Arnhem, Best Report

Value: €200

Date: 2012

T A L K S

Invited talks Invited Speaker, "Interaction Intelligence for HRI". Accenture Labs California (online). With Wendy Ju. October 21st, 2022.

Invited Speaker, Cornell Information Science Seminar. April 2022.

Invited participant and panelist, "How can models inform design?". Computational Models of Human-Automated Vehicle Interaction Seminar. Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Germany. March 6-11, 2022.

Invited Speaker, "After RisingWISE". RisingWISE reunion event by University of

Oxford and University of Cambridge. Woburn Safari Park Lodge, United Kingdom. September 25th, 2021.

Guest Speaker, "XR-OOM: miXed Reality On-rOad siMulator". XR-Monthly by the XR-Collective at Cornell Tech (online). With David Goedicke. February 19th, 2021.

Invited Participant, "RisingWISE". Event series by University of Oxford and University of Cambridge to connect women in STEM research. Held between Saïd Business School Oxford and Madingley Hall Cambridge, United Kingdom. November 2018 - January 2019.

Other Presenter. Cornell Tech outreach (online). July 2022.

Presenter. Computing and Information Science Research Night. Gates Hall, Cornell University, Ithaca, NY. November 2, 2021.

A D V I S I N G

2021– **Internship Advisor**, Cornell Tech, Cornell University, New York, NY

2023 Itay Grinberg: *Robots and dance*. (M, Technion, Israel)

- Demo paper accepted at SCF 2023.

2022 Cooper Murr: *Translating digital algorithms to paper*. (UG, Cornell)

2022 Daniel Zhou: *Exploring HAI interaction: calculator*. (UG, Cornell)

2022 Tobias Weinberg: *Drawing together*. (UG, Technion, Israel)

- Tobi is now a PhD student at Cornell Tech.

2021 Avital Dell'Araccia: *Robotic Tic-Tac-Toe*. (UG, Technion, Israel)

- Work-in-Progress paper accepted at TEI 2022.
- Video accepted at HRI 2022.
- Awarded Gary Marshden Travel Grant to HRI and TEI.

2021– **Project Advisor**, Cornell Tech, Cornell University, New York, NY

2023 Xuanyu Fang: *Bad Robots*. (M, Cornell Tech)

- Xuanyu supported work that was published at IROS 2023.

T E A C H I N G

2021– **Teaching Assistant**, Cornell Tech, Cornell University, New York, NY, USA

2022 (F) CS5424 Developing and Designing Interactive Devices

2021 (F) CS5424 Developing and Designing Interactive Devices

2021 (S) CS5678 Topics in Mixed Reality

DESIGN & ART EXPERIENCE

- 2015 (fall) **Speculative Design Intern**
Next Nature Network, Amsterdam, The Netherlands
- 2013–2015 **Volunteer at Interactive Art Exhibitions**
Dutch Design Week / Fiber Festival / GLOW Festival, The Netherlands

EDUCATION (OTHER)

- 2019 **Warwick University**, Coventry, United Kingdom
M.Eng. Module (5 CATS Credits), Human-Technology Interaction for Automotive
- 2010 **Radboud University**, Nijmegen, The Netherlands
Non-degree module, Designing and Making Web-Based Software

SERVICE

- Departmental Service 2022-23
- Task Force Design+Technology Center and Initiative, Cornell
- 2021-22
- Task Force Design+Technology Center and Initiative, Cornell
 - PhD admissions reviewer and interviewer
- 2020-21
- Task Force Design+Technology Center and Initiative, Cornell
 - PhD admissions reviewer and interviewer
- Academic Service Active service in:
- ACM SIGGRAPH (Special Interest Group on Computer Graphics and Interactive Techniques)
- 2023 Demo Volunteer, Blasts from the Past Exhibit
- ACM DIS (Designing Interactive Systems)
- 2021 Social Media Chair
- ACM AutoUI (Automotive User Interfaces and Interactive Vehicular Applications)
- 2020 Moderator
- 2019 Visual Design Chair

Peer Reviewer for:

- 2024 ACM DIS
- 2024 Springer Virtual Reality
- 2024 ACM HRI LBW
- 2024 ACM CHI
- 2023 ACM THRI
- 2022 ACM CHI
- 2021 ACM Auto-UI
- 2021 ACM IMWUT
- 2021 ACM DIS
- 2021 IEEE IV
- 2020 ACM CHI
- 2019 ACM Auto-UI

ASSOCIATIONS

Association for Computing Machinery

Optical Society of America

SKILLS

Software & Tools: GIMP, InkScape, LaTeX, InDesign, XD, Premiere, Photoshop, Illustrator, Python, R, git

Research: teaching, mentorship, collaboration, writing, electronics prototyping