Alexandra W.D. **Bremers**

Cornell Tech (NYC), Cornell University
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Ph.D. Candidate with 3+ years of full-time industrial R&D experience in the US and UK. Skilled designer, user researcher and developer of technical systems and demonstrators. Broadly trained accross UX and IxD domains, with additional expertise in designing for physical fabrication machines, robots and automotive interiors.

EDUCATION

2020-2025 (expected) — **Ph.D. in Information Science**, Cornell University, New York, NY, USA
Dissertation: "Towards Designing Mixed-Initiative Machines for Creatives."
Committee: Dr. Wendy Ju (chair), Dr. Francois Guimbretiere, Dr. Steve Marschner (CS minor).
Current projects:

- CraftAware: Understanding how people interact with fabrication machines (sewing, drawing, 3D printing) through video instrumentation and -analysis

- MachineDrawing: Designing workflows for creative collaboration with machines in fabrication tasks through implicit interactions, to inform future machine design

- CreativeWOz: Graduated Wizard-of-Oz through multimodal sensing with psi, to ultimately achieve increasingly automated machine responses to interactions during fabrication processes

2020-2023 — **M.S. in Information Science**, Cornell University, New York, NY, USA

2019 — **Coursework in Automotive Human-Technology Interaction (5 M.Eng. credits)**, Warwick University, UK

2016-2018 — **M.S. in Artificial Intelligence**, Utrecht University, The Netherlands
Thesis: "Perception of Perspective in Augmented Reality Windscreens."
Advisors: Dr. Chris Janssen, Valerian Meijering (Jaguar Land Rover).

2013-2016 — **B.S. in Industrial Design**, Eindhoven University of Technology, The Netherlands
Graduation Project: "How to Embroider a Radio"

EMPLOYMENT HISTORY

2020– — **Graduate Assistant**, Cornell University, New York, NY, USA

- Led team research projects funded by Toyota, Accenture, Nissan, and the NSF towards publication

- Prototyped interactive systems in hardware (Arduino, Jetson Nano) and software (Unity, Python)

- Used design methods and tools (Adobe CS, Figma, Miro) for brainstorming and communication

- Mentored undergraduates and master students and served as a TA 4x for master's level classes

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

- Designed and engineered Wizard-of-Oz task assistance system using Raspberry Pi and cameras
- Designed and ran in-person user study, analyzed data with R, and presented at ACM CUI 2024
- Produced novel material samples on a digital embroidery machine for materials research

2021 (summer) **Research Intern**, Toyota Research Institute, Los Altos, CA, USA (remote)

- Implemented KNN using Python with opencv to perform color analysis on an image dataset
- Visualized results using Python and R and presented findings to the research department

2017–2020 **Human-Machine Interface Researcher**, Jaguar Land Rover, Coventry, UK

- Led 2 research collaborations with Cambridge University, resulting in 2 journal articles
- Developed protocols and conducted HCI/human factors studies on the bench, simulator, and on-road
- Designed HMI research prototypes using Adobe CS and Arduino for internal demonstrations
- Delivered reports on GDPR and human factors to Product Engineering, informing system requirements
- Collaborated in cross-functional teams using Jira/Confluence, Rational Rhapsody and MS Office
- Oxford-Cambridge Rising Women in Science and Engineering, Global Finalist in Tata and JLR Innovista

2017 (summer) **Research Intern**, NTU IoX Center, National Taiwan University, Taiwan

- Designed a smart home user interface and used it as a probe for semi-structured qualitative interviews

2015 (fall) **Industrial Design Intern**, Next Nature Network, Amsterdam, Netherlands

- Used Arduino to program a remote-controlled RGB LED ring for a smart belt prototype
- Managed exhibits at Dutch Design Week and trade shows (logistics, graphic design and presenting)

SKILLS

Software & Tools: LaTeX, Adobe Creative Suite, Python, R, git, psi, Qualtrics, Arduino, Unity

UX Research: surveys, contextual inquiry, qualitative interviews, experimental design, data analysis

Design: sketching, wireframing, storyboarding, prototyping, fabrication (3D & wearables)

General: collaboration, writing, project management, mentorship, communication, intercultural awareness

LANGUAGES

Dutch (native), English (proficient)

PUBLICATIONS

Journal Articles [J1] **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.

[J2]   Natalie Friedman, **Alexandra Bremers**, Adelaide Nyanyo, Ian Clark, Yasmine Kotturi, Laura Dabbish, Wendy Ju, Nikolas Martelaro. "Understanding the Challenges of Maker Entrepreneurship". In: *Proceedings of the ACM on Human-Computer Interaction (PACM HCI): Computer-Supported Collaborative Work*. 2025 (forthcoming). DOI: https://arxiv.org/abs/2501.13765.

[J3]   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/10.1109/TIV.2023.3313419.

Conference Proceedings

[C1]   **Alexandra Bremers**, Wendy Ju. "Can Machines Tell What People Want? Bringing Situated Intelligence to Generative AI". In: *HTTF 2024: Proceedings of the Halfway to the Future Symposium*. 2024. DOI: https://doi.org/10.1145/3686169.3686172.

[C2]   **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/10.1109/IROS55552.2023.10342442.

[C3]   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". In: *HTTF 2024: Proceedings of the Halfway to the Future Symposium*. 2024. URL: https://doi.org/10.1145/3686169.3686189.

[C4]   Maria Teresa Parreira, Sukruth Gowdru Lingaraju, Adolfo Ramirez-Aristizabal, **Alexandra Bremers**, Manaswi Saha, Michael Kuniavsky, Wendy Ju. ""Bad Idea, Right?" Exploring Anticipatory Human Reactions for Outcome Prediction in HRI". In: *2024 IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. 2024. URL: https://doi.org/10.1109/RO-MAN60168.2024.10731310.

[C5]   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.

Other Formats (Demos, Videos & Datasets)

[O1]   **Alexandra Bremers**, Xuanyu Fang, Natalie Friedman, Wendy Ju. "Data for: The Bystander Affect Detection (BAD) Dataset for Failure Detection in HRI". In: *V1. Qualitative Data Repository: QDR Main Collection*. QDR Main Collection, 2023. DOI: https://doi.org/10.5064/F6TAWBGS.

[O2]   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/10.1145/3623263.3629150.

[O3]   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.

Extended Abstracts

[EA1]   **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: *CUI '24: Proceedings of the 6th International Conference on Conversational User Interfaces*. 2024. URL: https://dl.acm.org/doi/10.1145/3640794.3665580.

[EA2]   **Alexandra Bremers**, Manaswi Saha*, Adolfo Ramirez-Aristizabal. "Situated Conversational Agents for Task Guidance: A Preliminary User Study". In: *CUI '24: Proceedings of the 6th International Conference on Conversational User Interfaces*. (* = Shared first-authorship.) 2024. URL: https://dl.acm.org/doi/10.1145/3640794.3665575.

[EA3]   **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.

[EA4]   **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.

[EA5]   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. DOI: https://doi.org/10.1145/3613905.3651044.

[EA6]   Avital Dell'Ariccia, **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. D O I: https://doi.org/10.1145/3490149.3505571.

[EA7]   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. D O I: https://doi.org/10.1145/3473682.3480266.

[EA8]   Natalie Friedman, Kari Love, **Alexandra Bremers**, AJ Parry, Ray LC, Bolor Amgalan, Jen Liu, Wendy Ju. "Designing Functional Clothing for Human-robot Interaction". In: *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction*. 2021, pp. 703–705. D O I: https://doi.org/10.1145/3434074.3444870.

Workshops & Posters

[W1]   **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. D O I: http://dx.doi.org/10.13140/RG.2.2.22111.06562.

[W2]   **Alexandra Bremers**, Maria Teresa Parreira, Wendy Ju. "Understanding Bystander Facial Responses to Robot Task Failures with the BAD Dataset". In: *The Imperfectly Relatable Robot: An interdisciplinary workshop on the role of failure in HRI at the 18th Annual ACM/IEEE International Conference on Human-Robot Interaction*. 2023.

[W3]   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.

[W4]   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.

Under Review & Pre-prints

[R1]   **Alexandra Bremers**, Alexandria Pabst, Maria Teresa Parreira, Wendy Ju. "Using Social Cues to Recognize Task Failures for HRI: Overview, State-of-the-Art, and Future Directions". In: *(under review)*. 2023. D O I: https://doi.org/10.48550/arXiv.2301.11972.

[R2]   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. U R L: https://arxiv.org/abs/2311.06360.

[R3]   David Goedicke, Natalie Chyi, **Alexandra Bremers**, Stacey Li, James Grimmelmann, Wendy Ju. *Mutual Benefit: The Case for Sharing Autonomous Vehicle Data with the Public*. 2024. U R L: https://arxiv.org/abs/2409.01342.

[R4]   Maria Teresa Parreira, Ruidong Zhang, Sukruth Gowdru Lingaraju, **Alexandra Bremers**, Xuanyu Fang, Adolfo Ramirez-Aristizabal, Manaswi Saha, Michael Kuniavsky, Cheng Zhang, Wendy Ju. ""Why the face?": Exploring Robot Error Detection Using Instrumented Bystander Reactions". In: *(under review)*. 2024.

FELLOWSHIPS, HONORS & AWARDS

2023   Computing Research Association (CRA-WP) Grad Cohort for Women

2022   Cornell CIS Departmental Nominee, Google Fellowship

2022   Graduate Student Symposium, ACM Creativity & Cognition Conference

2022   Graduate Student Consortium, ACM Tangible, Embedded & Embodied Interaction Conference

2020   Royal Commission of 1851 Industrial Fellowship (£90,000)
Fellowship to pursue Engineering PhD at Cambridge University. Declined in order to accept Cornell offer.

2019   Finalist, Tata Innovista Awards

2019   Finalist, Jaguar Land Rover Innovista Awards

2018	Oxford-Cambridge Rising Women in Science and Engineering
2013-2016	Excellent (top 10%) for 3 semesters, Eindhoven University of Technology
2015	Second Prize, Designing the Office Competition, Bruynzeel Storage Systems (€ 500)
2013	Finalist, Stichting Ongehoord! Poetry Contest
2013	Discipulus Multus Meritis, Stedelijk Gymnasium Arnhem
2012	Best School Paper of The Netherlands: Overall & Design, Schoolkrantawards (€ 500)
2012	Best Report, Lions Club Arnhem Arenacum (€ 200)

GRANTS & SCHOLARSHIPS

2024	Cornell Backslash Art Microgrant ($500)
2024	Cornell Library Open-Access Publishing Fund ($350)
2021-2024	Cornell Graduate School Conference Travel Grant ($700, yearly)
2024	Cornell Bowers Computing & Information Science Grace Hopper Celebration Travel Grant ($1,500)
2022	Finnish Center for Artificial Intelligence HIIT/FCAI Travel Grant (€ 3,500)
2022	NSF ACM Creativity & Cognition Graduate Symposium Travel Grant ($1,900)
2021	Cornell Backslash Art Microgrant ($500)

PRESS COVERAGE

2024	**Mike Kuniavsky**, *Applied Distributed Cognition using foundation models and biosensing (a research agenda).* Medium.
2024	**Accenture Tech Vision**, *How the "Human Interface" Measures Intent.*
2023	**Cambridge University**, *Using machine learning to monitor driver workload could help improve road safety.*
2022	**Cornell Chronicle**, *Mixed reality driving simulator: a low-cost alternative.*
2019	**Jaguar Land Rover**, *Jaguar Land Rover Develops Immersive 3D In-Car Experience with Head-Up Display Research.*
2019	**Yahoo! News** *Jaguar Land Rover developing 3D in-car technology*
2019	**Forbes**, *To Prepare for an Autonomous Future, Jaguar Land Rover Brings 3D Augmented Reality into the Cabin.*

TALKS

| 2023 | "Audio Task Guidance". Accenture Labs California. |
| 2023 | "Towards Mixed-Initiative Machines for Creatives". Cornell CIS Information Science. |

2022	"Interaction Intelligence for HRI". Accenture Labs California. With Wendy Ju.
2022	"How can robots support human drawing?" Cornell Information Science Seminar.
2022	Panelist, "How can models inform design?". Schloss Dagstuhl, Seminar 22102, Germany.
2021	"Detecting design trends from autonomous vehicle data". Toyota Research Institute.
2021	"After RisingWISE". Oxford-Cambridge RisingWISE reunion. United Kingdom.
2021	"XR-OOM". XR-Monthly by the XR-Collective at Cornell Tech. With David Goedicke.

ADVISING

2023	Xuanyu Fang, Itay Grinberg
2022	Cooper Murr, Lunshi Zhou, Tobias Weinberg
2021	Avital Dell'Ariccia, Sam Lee

TEACHING

2025 (S)	TA, Designing Ubiquitous and Interactive Computing Devices with Joey Castillo, Cornell University
2022 (F)	TA, Developing and Designing Interactive Devices with Wendy Ju, Cornell University
2021 (F)	TA, Developing and Designing Interactive Devices with Wendy Ju, Cornell University
2021 (S)	TA, Topics in Mixed Reality with Harald Haraldsson, Cornell University
2011-2016	Private Tutor, Stedelijk Gymnasium Arnhem / StudentsPlus, Netherlands

DEPARTMENTAL SERVICE

2025-	Supermaker (volunteer instructor) at the MakerLAB, Cornell Tech, USA
2020-	Assistant to the founding Task Force, Design + Technology Department, Cornell University, USA
2021-2022	Co-President, Information Science Graduate Student Association (ISGSA), Cornell University, USA
2016-2017	Founder and President, A.I. M.S. students association (mAIster), Utrecht University, Netherlands

ACADEMIC CONFERENCE SERVICE

2024	Student Volunteer, IEEE UR
2023	Student Volunteer, ACM SIGGRAPH
2021	Social Media Chair, ACM DIS
2020	Moderator, ACM Auto-UI
2019	Visual Design Chair, ACM Auto-UI

ACADEMIC PEER REVIEWER

2025 ACM HRI

2024 ACM DIS/HRI/CHI/CSCW/HTTF, Springer VR/ICSR

2023 ACM THRI

2022 ACM CHI

2021 ACM Auto-UI/IMWUT/DIS, IEEE IV

2020 ACM CHI

2019 ACM Auto-UI

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM)

Institute of Electrical and Electronics Engineers (IEEE)

New York Academy of Sciences (NYAS)

Computing Research Association (CRA)