DAVID GOEDICKE

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http://davidgoedicke.com

I specialize in immersive experiences, human-robot interactions, and virtual environments. My work is rooted in enabling qualitative behavioral methods and Wizard of Oz'ed prototypes through VR/XR simulators to assess designs before implementation. These methods facilitate complex interactions among users, robots, and simulated agents in virtual and augmented spaces. Drawing on a diverse background in interactive art, game development, and music, I enrich the qualitative depth of these technologies. My research aims to advance our understanding of human-technology interactions, with implications mainly in designing behaviors for robots and automated systems. As an educator, my pedagogical approach promotes project-based, hands-on learning to empower students to independently navigate and solve complex problems.

EDUCATION

2018–2023 **Cornell Tech** | New York City, NY
Ph.D. in Information Science
Dissertation:*DRIVING SIMULATION FOR INTERACTION*
Committee: Wendy Ju, Malte Jung, Serge Belongie

2014–2017 **University of Twente** | Enschede, Netherlands
M.Sc. in Human Media Interaction

2011–2014 **University of Twente** | Enschede, Netherlands
B.Sc. Creative Technology
Graduate with Cum Laude

2010–2011 **Technische Universität Dortmund** | Dortmund, Germany
Informatics

EMPLOYMENT

2024–NOW **Post Doctoral Researcher**
Human-Computer Interaction (Prof. Stefan Schneegass)
University of Duisburg-Essen

2023–2024 **Post Doctoral Researcher**
Future Automation Research Lab (Prof. Wendy Ju)
Cornell Tech

2020 **Research and Development Intern**
Toyota Research Institute - Internship
ADVISOR: Dr. Hiroshi Yasuda

2019 **Research and Development Intern**
Samsung Electronics · Internship
ADVISOR: Prof. Gregory Dudek

2017 **Visiting Research Scholar**
Stanford University - Center for Design Research
ADVISOR: Prof. Wendy Ju

2016 **Visiting Research Scholar**
Nissan Research-SV
ADVISOR: Dr. Erik Vinkhuyzen, Melissa Cefkin

2014-2016 **Research assistant**
Human Media Interaction group
ADVISOR: Prof. Dennis Reidsma, Robby van Delden

2009-2010 **Zivildienst**
Alloheim Senioren-Residenz "Schloss Westhusen"

International Collaborations

since 2024 **Research Software**
Lynda NG Boyle
NYU, New York, US

since 2024 **Research Software**
Andreas Riener
Technische Hochschule Ingolstadt, Germany

since 2023 **Research Software**
Bruce Walker
Georgia Tech, Atlanta, US

since 2022 **Research Collaboration**
Ray LC
City University Hong Kong

since 2018 **Research Collaboration**
Avi Parush
Technion, Israel

since 2017 **Research Collaboration**
David Sirkin and Becky Currano
Stanford, California, US

Outreach Activities

2024 Support organizing the local science week in Essen to showcase the research group's work.

2018 - 2023 During my time at Cornell Tech I occasionally helped teach the local Girl Scout Robotics team.

PUBLICATIONS

Journal Articles

David Goedicke, Carmel Zolkov, Natalie Friedman, Talia Wise, Avi Parush, Wendy Ju. "Strangers in a Strange Land: New Experimental System for Understanding Driving Culture Using VR". In: *IEEE Transactions on Vehicular Technology* 71.4 (Apr. 2022), pp. 3399–3413. ISSN: 1939-9359. DOI: 10.1109/TVT.2022.3152611.

Conference Papers (Refereed)

Jonas Keppel, Marvin Strauss, Shuoheng Zhang, Markus Stroehnisch, Stefan Lewin, Uwe Gruenefeld, Donald Degraen, **David Goedicke**, Andrii Matviienko, Stefan Schneegass. "The Impact of Bike-Based Controllers and Adaptive Feedback on Immersion and Enjoyment in a Virtual Reality Cycling Exergame". In: *Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems*. CHI EA '25. Association for Computing Machinery, 2025. ISBN: 9798400713958. DOI: 10.1145/3706599.3720096. URL: https://doi.org/10.1145/3706599.3720096.

Nick Wittig, Noro Schlorke, Roman Heger, Theresa Wettig, Marion Koelle, Uwe Gruenefeld, **David Goedicke**, Donald Degraen, Ricarda Steinmayr, Stefan Schneegass. "You ARe Correct! Comparing Augmented Reality Displays for Individual Feedback in Classroom Settings". In: *Proceedings of the 24th Interaction Design and Children*. New York, NY, USA: Association for Computing Machinery, 2025, pp. 622–635. ISBN: 9798400714733. URL: https://doi.org/10.1145/3713043.3728864.

Fanjun Bu, Stacey Li, **David Goedicke**, Mark Colley, Gyanendra Sharma, Wendy Ju. "Portobello: Extending Driving Simulation from the Lab to the Road". In: *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*. CHI '24. Honourable Mention. Hawai: Association for Computing Machinery, 2024. DOI: 10.1145/3613904.3642341. URL: https://doi.org/10.1145/3613904.3642341.

Debargha Dey, **David Goedicke**, Chishang Yang, David Sirkin, Rebecca Currano, Wendy Ju. "GrokWalks: A Portable Virtual Reality Platform to Facilitate Studying Driver-Pedestrian Interactions". In: *Adjunct Proceedings of the 16th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*. AutomotiveUI '24 Adjunct. Stanford, CA, USA: Association for Computing Machinery, 2024, pp. 284–288. ISBN: 9798400705205. DOI: 10.1145/3641308.3685013. URL: https://doi.org/10.1145/3641308.3685013.

Rachel DiPirro, Hauke Sandhaus, **David Goedicke**, Dan Calderone, Meeko Oishi, Wendy Ju. "Characterizing Cultural Differences in Naturalistic Driving Interactions". In: *2024 IEEE 27th International Conference on Intelligent Transportation Systems (ITSC)*. 2024, pp. 3651–3658. DOI: 10.1109/ITSC58415.2024.10919603.

Navit Klein, Hauke Sandhaus, **David Goedicke**, Wendy Ju, Avi Parush. "Modeling Social Situation Awareness in Driving Interactions". In: *Proceedings of the 16th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*. AutomotiveUI '24. Stanford, CA, USA: Association for Computing Machinery, 2024, pp. 259–271. ISBN: 9798400705106. DOI: 10.1145/3640792.3675717. URL: https://doi.org/10.1145/3640792.3675717.

Nick Wittig, Tobias Drey, Theresa Wettig, Jonas Auda, Marion Koelle, **David Goedicke**, Stefan Schneegass. "LeARn at Home: Comparing Augmented Reality and Video Conferencing Remote Tutoring". In: *Proceedings of the International Conference on Mobile and Ubiquitous Multimedia*. MUM '24. Association for Computing Machinery, 2024, pp. 255–263. ISBN: 9798400712838. DOI: 10.1145/3701571.3701577. URL: https://doi.org/10.1145/3701571.3701577.

Nialah Jenae Wilson-Small, **David Goedicke**, Kirstin Petersen, Shiri Azenkot. "A Drone Teacher: Designing Physical Human-Drone Interactions for Movement Instruction". In: *Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*. HRI '23. Stockholm, Sweden: Association for Computing Machinery, 2023, pp. 311–320. ISBN: 9781450399647. DOI: 10.1145/3568162.3576985. URL: https://doi.org/10.1145/3568162.3576985.

David Goedicke, Alexandra W.D. Bremers, Sam Lee, Fanjun Bu, Hiroshi Yasuda, Wendy Ju. "XR-OOM: MiXed Reality Driving Simulation with Real Cars for Research and Design". In: *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. CHI '22. New Orleans, LA, USA: Association for Computing Machinery, 2022. ISBN: 9781450391573. DOI: 10.1145/3491102.3517704. URL: https://doi.org/10.1145/3491102.3517704.

Andrea Cuadra, **David Goedicke**, J.D. Zamfirescu-Pereira. "Democratizing Design and Fabrication Using Speech: Exploring Co-Design with a Voice Assistant". In: *Proceedings of the 3rd Conference on Conversational User Interfaces*. CUI '21. Bilbao (online), Spain: Association for Computing Machinery, 2021. ISBN: 9781450389983. DOI: 10.1145/3469595.3469624. URL: https://doi.org/10.1145/3469595.3469624.

J.D. Zamfirescu-Pereira, David Sirkin, **David Goedicke**, Ray LC, Natalie Friedman, Ilan Mandel, Nikolas Martelaro, Wendy Ju. "Fake It to Make It: Exploratory Prototyping in HRI". In: *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction*. HRI '21 Companion. Boulder, CO, USA: Association for Computing Machinery, 2021, pp. 19–28. ISBN: 9781450382908. DOI: 10.1145/3434074.3446909. URL: https://doi.org/10.1145/3434074.3446909.

Jamy Li, Rebecca Currano, David Sirkin, **David Goedicke**, Hamish Tennent, Aaron Levine, Vanessa Evers, Wendy Ju. "On-Road and Online Studies to Investigate Beliefs and Behaviors of Netherlands, US and Mexico Pedestrians Encountering Hidden-Driver Vehicles". In: *Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction*. HRI '20. Cambridge, United Kingdom: Association for Computing Machinery, 2020, pp. 141–149. ISBN: 9781450367462. DOI: 10.1145/3319502.3374790. URL: https://doi.org/10.1145/3319502.3374790.

Marcel Walch, Stacey Li, Ilan Mandel, **David Goedicke**, Natalie Friedman, Wendy Ju. "Crosswalk Cooperation: A Phone-Integrated Driver-Vehicle Cooperation Approach to Predict the Crossing Intentions of Pedestrians in Automated Driving". In: *12th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*. AutomotiveUI '20. Virtual Event, DC, USA: Association for Computing Machinery, 2020, pp. 74–77. ISBN: 9781450380669. DOI: 10.1145/3409251.3411727. URL: https://doi.org/10.1145/3409251.3411727.

Vincent Zhang, Natalie Friedman, **David Goedicke**, Dmitriy Rivkin, Michael Jenkin, Xue Liu, Gregory Dudek. "The Answer Is Blowing in the Wind: Directed Air Flow for Socially-acceptable Human-Robot Interaction." In: *Proceedings International Conference on Robotics, Computer Vision, and Intelligent Systems (ROBOVIS)*. 2020.

Sven Krome, **David Goedicke**, Thomas J. Matarazzo, Zimeng Zhu, Zhenwei Zhang, J. D. Zamfirescu-Pereira, Wendy Ju. "How People Experience Autonomous Intersections: Taking a First-Person Perspective". In: *Proceedings of the 11th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*. AutomotiveUI '19. Utrecht, Netherlands: Association for Computing Machinery, 2019, pp. 275–283. ISBN: 9781450368841. DOI: 10.1145/3342197.3344520. URL: https://doi.org/10.1145/3342197.3344520.

David Goedicke, Jamy Li, Vanessa Evers, Wendy Ju. "VR-OOM: Virtual Reality On-ROad Driving SiMulation". In: *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. CHI '18. Montreal QC, Canada: Association

for Computing Machinery, 2018, pp. I–II. ISBN: 9781450356206. DOI: 10.1145/3173574.3173739. URL: https://doi.org/10.1145/3173574.3173739.

Workshops Papers (Refereed)

Karoline Brehm, Yan Shvartzshnaider, **David Goedicke**. *Contextual Integrity of A Virtual (Reality) Classroom*. 2023. arXiv: 2303.13684 [cs.CY].

Madiha Zahrah Choksi, **David Goedicke**. *Whose Text Is It Anyway? Exploring BigCode, Intellectual Property, and Ethics*. 2023. arXiv: 2304.02839 [cs.CY].

Demos, Videos, and Work-In-Progress (Refereed)

Natalie Friedman, **David Goedicke**, Vincent Zhang, Dmitriy Rivkin, Michael Jenkin, Ziedune Degutyte, Arlene Astell, Xue Liu, Gregory Dudek. "Capturing attention with wind". In: *Proceedings Workshop on Integrating Multidisciplinary Approaches to Advanced Physical Human-Robot Interaction.* *Held alongside the IEEE 2020 International Conference on Robotics and Automation (ICRA).

Michael Jenkin, Natalie Friedman, **David Goedicke**, Vincent Zhang, Dmitriy Rivkin, Ziedune Degutyte, Arlene Astell, Xue Liu, Gregory Dudek. "Out of my way! Exploring Different Modalities for Robots to Ask People to Move Out of the Way". In: *Proceedings Workshop on Active Vision and Perception in Human (Robot) Collaboration.* *Held alongside the 29th IEEE International Conference on Robot and Human Interactive Communication. September. 2020.

David Goedicke, Harald Haraldsson, Navit Klein, Lunshi Zhou, Avi Parush, Wendy Ju. "ReRun: Enabling Multi-Perspective Analysis of Driving Interaction in VR". In: *Companion of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*. HRI '23. Stockholm, Sweden: Association for Computing Machinery, 2023, pp. 889–890. ISBN: 9781450399708. DOI: 10.1145/3568294.3580211. URL: https://doi.org/10.1145/3568294.3580211.

Regina Bernhaupt, Mark Colley, **David Goedicke**, Alexander Meschtscherjakov, Bastian Pfleging, Andreas Riener, Shadan Sadeghian. "A Critical Perspective on Radically Innovating Personal Mobility". In: *Adjunct Proceedings of the 14th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*. AutomotiveUI '22. Seoul, Republic of Korea: Association for Computing Machinery, 2022, pp. 215–218. ISBN: 9781450394284. DOI: 10.1145/3544999.3551689. URL: https://doi.org/10.1145/3544999.3551689.

Organized Workshops

David Goedicke, Wendy Ju. "Neural Nets for Music". In: Stanford University Stanford, CA 94305-8180 USA: Center for Computer Research in Music and Acoustics, 2019 & 2020. URL: https://ccrma.stanford.edu/workshops/canceled-using-neural-nets-sonic-interaction-design.

David Goedicke, Stacey Li, Donald Degraen, Kevin John, Yuta Sugiura, Tian Min, Hyunyoung Kim, Sonya S. Kwak, Valkyrie Savage, Tom Igoe, David Sirkin, Wendy Ju, Stefan Schneegass. "Bring Your Own Interface: Exploring Tactile Interaction in Maritime Automation". In: *Companion Publication of the 2025 ACM Designing Interactive Systems Conference*. New York, NY, USA: Association for Computing Machinery, 2025, pp. 35–38. ISBN: 9798400714863. URL: https://doi.org/10.1145/3715668.3734183.

David Goedicke, Hamish Tennent, Dylan Moore, Wendy Ju. "Acoustically Aware Robots: Detecting and Evaluating Sounds Robots Make and Hear". In: *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction*. HRI '21 Companion. Boulder, CO, USA: Association for Computing Machinery, 2021, pp. 697–699. ISBN: 9781450382908. DOI: 10.1145/3434074.3444876. URL: https://doi.org/10.1145/3434074.3444876.

Nikolas Martelaro, J.D. Zamfirescu-Pereria, **David Goedicke**, David Sirkin, Wendy Ju. "Make This! Introduction to Electronics Prototyping Using Arduino". In: *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. CHI EA '20. Honolulu, HI, USA: Association for Computing Machinery, 2020, pp. 1–4. ISBN: 9781450368193. DOI: 10.1145/3334480.3375052. URL: https://doi.org/10.1145/3334480.3375052.

Sven Krome, Eric Deng, **David Goedicke**, Wendy Ju, Ignacio Alverez, Jaka Sodnik, Andrew Veit, Francesco Grani. "Simulator Showdown: Pitch Your Virtual Ride". In: *Proceedings of the 11th International Conference on Automotive User Interfaces and Interactive Vehicular Applications: Adjunct Proceedings*. AutomotiveUI '19. Utrecht, Netherlands: Association for Computing Machinery, 2019, pp. 25–31. ISBN: 9781450369206. DOI: 10.1145/3349263.3350765. URL: https://doi.org/10.1145/3349263.3350765.

Preprint Articles

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. arXiv: 2409.01342 [cs.CY]. URL: https://arxiv.org/abs/2409.01342.

Karoline Brehm, Yan Shvartzshnaider, **David Goedicke**. *Contextual Integrity of A Virtual (Reality) Classroom*. 2023. arXiv: 2303.13684 [cs.CY]. URL: https://arxiv.org/abs/2303.13684.

Madiha Zahrah Choksi, Ilan Mandel, **David Goedicke**, Yan Shvartzshnaider. *Enclosed Loops: How open source communities become datasets*. 2023. arXiv: 2306.05598 [cs.CY].

David Goedicke, Mark Colley, Sebastian S. Feger, Michael Goedicke, Bastian Pfleging, Wendy Ju. *Towards Sustainable Research Data Management in Human-Computer Interaction*. 2023. arXiv: 2307.10467 [cs.HC].

Public Articles

Manaswi Saha, Wendy Ju, Mike Kuniavsky, **David Goedicke**. *Audio AR: An Introduction*. 2023. URL: https://medium.com/labs-notebook/audio-ar-an-introduction-698661405ff4.

RESEARCH GRANTS & GIFTS

Federal Grants

2022 National Science Foundation IIS-2212431: **NSF-BSF: HCC: Medium: Cultural Differences in Pedestrian-Autonomous Vehicle Interaction**
Investigators: Wendy Ju (PI), Qian Yang, Cornell (Co-PI), Avi Parush, Technion (Co-PI)
Amount: $599,986
Dates: 9/01/2022 - 9/30/2024

2021 National Science Foundation IIS-2107111: **HCC: Medium: Cultural Differences in Driving Interaction**
Investigators: Wendy Ju (PI), Qian Yang, Cornell (Co-PI), Avi Parush, Technion (Co-PI)
Amount: $800,000
Dates: 10/01/2021 - 9/30/2024

HONORS & AWARDS

2012-2014 **B.Sc. Honors program** University of Twente.

SELECTED PRESS COVERAGE

2022 **Cornell Chronicle** *Mixed-reality driving simulator a low-cost alternative*
https://news.cornell.edu/stories/2022/04/mixed-reality-driving-simulator-low-cost-alternative

2020 **Cornell Chronicle** *'Ghostdrivers' test cultural reactions to autonomous cars*
https://news.cornell.edu/stories/2020/04/ghostdrivers-test-cultural-reactions-autonomous-cars

TEACHING

Spring 2025 **Master Engineering Interactive Systems**
Project class focused on prototyping interactive devices with *Prof. Schneegass*.

Fall 2024 **Bachelor Seminar**
Teaching Fundamentals of academic work with *Prof. Schneegass*.

Spring 2020 **Masters Specialization Project**
Master Student Projects at Cornell Tech with *Prof. Estrin* and *Prof. Azenkot*.

Fall 2019 **Masters Specialization Project**
Master Student Projects at Cornell Tech with *Prof. Estrin* and *Prof. Azenkot*.

Spring 2018 **Developing and Designing Interactive Devices**

Taught by Wendy Ju

2013-2016 **University of Twente *-Design Lab-*, Teacher**
Workshops on Augmented Reality and Virtual Reality in Unity.
Teaching and supervising B.S. Honors students in a Prototyping and Design Course

PROFESSIONAL SERVICE

Conference Organizing Committee Roles

2022 **Social Media Chair**
15th International ACM Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutoUI)

2022 **Video Chair**
ACM Conference on Designing Interactive Systems (DIS)

Reviewing Service

ACM Conference in Human Factors in Computing (CHI)
ACM/IEEE Human-Robot Interaction Conference (HRI)
ACM Conference in Automotive User Interfaces (AutoUI)
Spring Virtual Reality Journal