

# DRIES CARDINAELS

PHD STUDENT

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## CONTACT

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## BIOGRAPHY

I am a PhD student at UHasselt, where I research how humans interact with robots from a distance through teleoperation. My work focuses on how communication delay affects operator awareness, control, and decision making, and how interface design can help people remain effective under these conditions. My most recent paper, UNITE: A Modular Testbed for Reproducible Delayed Space Teleoperation, will appear at SpaceCHI 2026. Grounded in a scoping review of 83 studies of delayed teleoperation, we introduce UNITE, an open-source modular testbed that captures the full experimental apparatus as a shareable configuration, so studies of teleoperation under communication delay can be reproduced, compared, and extended without rebuilding the setup. This builds on Every Move You Make: Visualizing Near-Future Motion Under Delay for Telerobotics (CHI 2026), where we introduced and evaluated predictive visualizations that show a robot's near-future motion to help operators anticipate delayed feedback and improve control under communication delay. Beyond research, I enjoy the teaching side of academia, where I guide students and supervise theses. I am part of the Intelligent Interactive Systems group at UHasselt Digital Future Lab.

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## PUBLICATIONS

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| September 2026<br>Full Paper       | <b>Dries Cardinaels</b> , Thomas Pietrzak, Raf Ramakers, and Kris Luyten. 2026. UNITE: A Modular Testbed for Reproducible Delayed Space Teleoperation. In Proceedings of SpaceCHI 2026: Advancing Human-Computer Interaction for Space Exploration (SpaceCHI '26), September 24–25, 2026, Mountain View, CA, USA. Springer Nature, Cham, Switzerland. In press.                                                                                                                                                                |
| April 2026<br>Full Paper           | <b>Dries Cardinaels</b> , Raf Ramakers, Tom Veuskens, Thomas Pietrzak, Gustavo Alberto Rovelo Ruiz, and Kris Luyten. 2026. Every Move You Make: Visualizing Near-Future Motion Under Delay for Telerobotics. In Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26), April 13–17, 2026, Barcelona, Spain. Association for Computing Machinery, New York, NY, USA, <a href="https://doi.org/10.1145/3772318.3791452">https://doi.org/10.1145/3772318.3791452</a>                             |
| April 2026<br>Poster               | Bram Verstappen, <b>Dries Cardinaels</b> , Danny Leen, Kris Luyten, and Raf Ramakers. 2026. Learning to Delegate and Act with DELEGACT: Multimodal Language Models for Task-Level Human-Cobot Planning in Industrial Assembly. In Extended Abstracts of the 2026 CHI Conference on Human Factors in Computing Systems (CHI EA '26), April 13–17, 2026, Barcelona, Spain. Association for Computing Machinery, New York, NY, USA, <a href="https://doi.org/10.1145/3772363.3798803">https://doi.org/10.1145/3772363.3798803</a> |
| March 2025<br>Poster               | <b>Dries Cardinaels</b> , Tom Veuskens, Raf Ramakers, and Kris Luyten. 2025. Challenges and Opportunities for Delay-Invariant Telerobotic Interactions. In 30th International Conference on Intelligent User Interfaces Companion (IUI Companion '25), March 24–27, 2025, Cagliari, Italy. ACM, New York, NY, USA 5 Pages. <a href="https://doi.org/10.1145/3708557.3716332">https://doi.org/10.1145/3708557.3716332</a>                                                                                                       |
| October 2024<br>Poster             | Xander Vaes, <b>Dries Cardinaels</b> , Mannu Lambrichts, and Raf Ramakers. 2024. SOLDAR: Supporting Low-Volume PCB Prototyping Using Collaborative Robots and Augmented Reality. In Proceedings of the 30th ACM Symposium on Virtual Reality Software and Technology (VRST '24). Association for Computing Machinery, New York, NY, USA, Article 54, 1–2. <a href="https://doi.org/10.1145/3641825.3689496">https://doi.org/10.1145/3641825.3689496</a>                                                                        |
| March 2024<br>Late-Breaking Report | <b>Dries Cardinaels</b> , Bram Van Deurzen, Raf Ramakers, and Kris Luyten. 2024. Anthand: Interaction Techniques for Precise Telerobotic Control Using Scaled Objects in Virtual Environments. In Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI '24). Association for Computing Machinery, New York, NY, USA, 297–301. <a href="https://doi.org/10.1145/3610978.3640569">https://doi.org/10.1145/3610978.3640569</a>                                                                 |

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| March 2024<br>Workshop Paper | Bram van Deurzen, <b>Dries Cardinaels</b> , Gustavo Rovelo Ruiz, and Kris Luyten. 2024. A VR Prototype for One-Dimensional Movement Visualizations for Robotic Arms. In 7th International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions (HRI '24). Association for Computing Machinery, New York, NY, USA. <a href="https://openreview.net/forum?id=0AjSzOEqpY">https://openreview.net/forum?id=0AjSzOEqpY</a> |  |
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## EDUCATION

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|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 9/2021 - 7/2023 | <b>Master's Degree in Computer Science (Magna Cum Laude)</b><br>Thesis: Studying and Analyzing Implementations and Techniques in a Telerobotic Environment<br><a href="#">Prof. dr. Kris Luyten</a> & <a href="#">Prof. dr. Frank van Reeth</a> | UHasselt |
| 9/2018 - 7/2021 | <b>Bachelor's Degree in Computer Science (Cum Laude)</b><br>Thesis: Serious Game to Educate Heart Patients<br><a href="#">Prof. dr. Gustavo Rovelo Ruiz</a>                                                                                     | UHasselt |

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## RESEARCH EXPERIENCE

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|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 11/2023 - Present | <b>PhD Student @ Digital Future Lab, Diepenbeek, Belgium</b><br>(Advisor) <a href="#">Prof. dr. Kris Luyten</a> & (Co-Advisor) <a href="#">Prof. dr. Raf Ramakers</a> | UHasselt |
| 9/2023 - 11/2023  | <b>Researcher @ Digital Future Lab, Diepenbeek, Belgium</b>                                                                                                           | UHasselt |

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## TEACHING EXPERIENCE

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|------------------|--------------------------------------------------------------------|-----------|
| 9/2024 - Present | <b>Advanced Object Oriented Programming</b>                        | 4985      |
| 9/2023 - Present | <b>Computer Architecture</b>                                       | 4863      |
| 9/2023 - 1/2026  | <b>Computational Fabrication</b>                                   | 4169/4719 |
| 2/2024 - 6/2025  | <b>Tools and Technologies for Interactive System Development</b>   | 2184      |
| 2/2024 - 6/2024  | <b>Project Software Ontwikkeling en Professionele Vaardigheden</b> | 2252      |
| 9/2023 - 1/2024  | <b>Object Oriented Programming II</b>                              | 4183      |

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## THESIS ADVISING

|                  |                                                                                                                                     |                  |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 9/2025 - Present | <b>Bachelor Thesis on Mobile Telerobotics</b><br>Spatial Bitrate Allocation to Handle Uncertainty in Teleoperation of Mobile Robots | Computer Science |
| 9/2025 - 6/2026  | <b>Bachelor Thesis on Mobile Telerobotics</b><br>Probabilistic Envelope for Delayed Teleoperation Under Environmental Uncertainty   | Computer Science |
| 9/2025 - 6/2026  | <b>Bachelor Thesis on Mobile Telerobotics</b><br>GHOST: Guided Holographic Overlays for Safe Teleoperation                          | Computer Science |

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|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 9/2025 - 6/2026 | <b>Master Thesis on Telerobotics</b><br>Mitigating Jitter Effects in Long-Distance Teleoperation of Robotic Systems                            | Computer Science       |
| 9/2025 - 6/2026 | <b>Master Thesis on Mobile Telerobotics</b><br>Human-in-the-Loop Path Planning for Delayed Mobile Robot Teleoperation                          | Computer Science       |
| 2/2025 - 8/2025 | <b>Bachelor Thesis on Interactive Game Development</b><br>Design and Implementation of a Physical VR Game Using Motion Capture Technology      | Computer Science       |
| 2/2025 - 6/2025 | <b>Bachelor Thesis on Collaborative Robots</b><br>Feedforward for Human-Robot Interaction                                                      | Computer Science       |
| 2/2025 - 6/2025 | <b>Bachelor Thesis on Collaborative Robots</b><br>Feedforward for Human-Robot Interaction                                                      | Industrial Engineering |
| 9/2024 - 6/2025 | <b>Master Thesis on Collaborative Robots</b><br>Large Language Models as Drivers for Robotic Control                                           | Computer Science       |
| 2/2024 - 6/2024 | <b>Bachelor Thesis on Collaborative Robots</b><br>Supporting Low-Volume PCB Prototyping Using Collaborative Robots and Augmented Reality       | Computer Science       |
| 2/2024 - 6/2024 | <b>Bachelor Thesis on Precise Delta Robot Manufacturing</b><br>Design and Construction of a Linear Delta Robot Using Precision Piezo Actuators | Industrial Engineering |

## ACADEMIC SERVICE

|                  |                                                                                          |           |
|------------------|------------------------------------------------------------------------------------------|-----------|
| 6/2026 - Present | <b>Web Co-Chair</b><br>ACM SIGCHI Symposium on Engineering Interactive Computing Systems | EICS'27   |
| 5/2021 - Present | <b>GIP Jury</b><br>Geïntegreerde Proef / Integrated Final Project                        | TISM Bree |

## PROJECTS



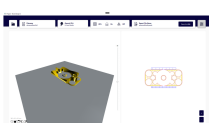
BibTeX Cleaner is a browser tool I built to check a .bib file against a LaTeX / Overleaf project. It flags missing, unused, redundant, and misused references, and lets you download a cleaned .bib with the unused entries removed. Everything runs locally in your browser — nothing is uploaded.

Additional project information: [driescardinaels.be/tools/bibtex-cleaner.html](https://driescardinaels.be/tools/bibtex-cleaner.html)



Ongevallen in Kaart is an interactive dashboard and map of Belgian traffic accidents. It started as a course project for Information Visualization at UHasselt and was rebuilt in 2026 with data through 2025 and a national map of every geolocated accident from 2017–2024. Click the charts to filter yearly accident and victim statistics by day, weekday, or hour, compare two years side by side, or switch the map between a density heatmap and individual points filtered by severity, weather, and road user. Built with data from Statbel.

Additional project information: [infovis.driescardinaels.be](https://infovis.driescardinaels.be) · [studiegidswww.uhasselt.be/opleidingsonderdeel.aspx?a=2021&i=2185&n=4&t=04](https://studiegidswww.uhasselt.be/opleidingsonderdeel.aspx?a=2021&i=2185&n=4&t=04) · [statbel.fgov.be/nl/open-data?category=162](https://statbel.fgov.be/nl/open-data?category=162)



As part of the Computational Fabrication course at UHasselt, we developed a custom 3D slicer tool inspired by Cura. We took inspiration from Cura's user interface, focusing on building a streamlined tool with a clean and intuitive design for a better user experience. We enhanced the project with additional features, and the final tool demonstrates improved usability and effective 3D printing capabilities, showcased through printed objects.

Additional project information: [studiegidswww.uhasselt.be/opleidingsonderdeel.aspx?n=4&t=04&a=2023&i=4169](https://studiegidswww.uhasselt.be/opleidingsonderdeel.aspx?n=4&t=04&a=2023&i=4169)

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## PRESENTATIONS

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|---------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|
| April 2026    | <b>Oral Presentation</b><br>ACM CHI Conference on Human Factors in Computing Systems, Barcelona, Spain                      | CHI'26             |
| February 2026 | <b>Oral Presentation</b><br>Every Move You Make: Visualizing Near-Future Motion Under Delay for Telerobotics                | Digital Future Lab |
| November 2025 | <b>Project Presentation</b><br>Adaptive Human-Robot Collaboration System with Large Language Models (LLMs)                  | Flanders Make      |
| March 2025    | <b>Poster Presentation</b><br>ACM SIGCHI Conference on Intelligent User Interfaces, Cagliari (Sardinia), Italy              | IUI'25             |
| June 2024     | <b>Oral Presentation</b><br>ACM SIGCHI Symposium on Engineering Interactive Computing Systems, Cagliari (Sardinia), Italy   | EICS'24            |
| June 2024     | <b>Poster Presentation</b><br>ACM SIGCHI Symposium on Engineering Interactive Computing Systems, Cagliari (Sardinia), Italy | EICS'24            |
| March 2024    | <b>Poster Presentation</b><br>ACM/IEEE International Conference on Human-Robot Interaction, Boulder (CO), USA               | HRI'24             |

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## REVIEWING EXPERIENCE

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|----------------|--------------------------------------------------------------------------------------------------------|---------|
| June 2026      | <b>Full Paper (1)</b><br>The 18th ACM SIGCHI Symposium on Engineering Interactive Computing Systems    | EICS'26 |
| September 2025 | <b>Full Paper (1)</b><br>The ACM Symposium on User Interface Software and Technology                   | UIST'25 |
| June 2025      | <b>Full Paper (1)</b><br>The 17th ACM SIGCHI Symposium on Engineering Interactive Computing Systems    | EICS'25 |
| March 2025     | <b>Full Paper (1)</b><br>19th International Conference on Tangible, Embedded, and Embodied Interaction | TEI'25  |
| October 2024   | <b>Full Paper (1)</b><br>30th ACM Symposium on Virtual Reality Software and Technology                 | VRST'24 |
| May 2024       | <b>Late-Breaking Work (1)</b><br>Conference on Human Factors in Computing Systems                      | CHI'24  |
| March 2024     | <b>Late Breaking Report (3)</b><br>ACM/IEEE International Conference on Human-Robot Interaction        | HRI'24  |

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## CO-AUTHORS

**Kris Luyten**

U Hasselt · Diepenbeek, Belgium

6 Publications

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|--------------------------------------------------------------|-----------------------|
| <b>Raf Ramakers</b><br>UHasselt · Diepenbeek, Belgium        | <b>6</b> Publications |
| <b>Thomas Pietrzak</b><br>Inria, Univ. Lille · Lille, France | <b>2</b> Publications |
| <b>Tom Veuskens</b><br>UHasselt · Diepenbeek, Belgium        | <b>2</b> Publications |
| <b>Bram Van Deurzen</b><br>UHasselt · Diepenbeek, Belgium    | <b>2</b> Publications |
| <b>Gustavo Roveló Ruiz</b><br>UHasselt · Diepenbeek, Belgium | <b>2</b> Publications |
| <b>Bram Verstappen</b><br>UHasselt · Diepenbeek, Belgium     | <b>1</b> Publication  |
| <b>Danny Leen</b><br>UHasselt · Diepenbeek, Belgium          | <b>1</b> Publication  |
| <b>Mannu Lambrichts</b><br>UHasselt · Diepenbeek, Belgium    | <b>1</b> Publication  |
| <b>Xander Vaes</b><br>UHasselt · Diepenbeek, Belgium         | <b>1</b> Publication  |