Bram Grooten

Postdoc in Deep Learning

Postdoc at TU Eindhoven, focusing on **vision-language-action** models, **robotics**, reinforcement learning, and generalization. My long-term aim is to create reliable, adaptive, and intelligent agents acting in real-world scenarios. I pursue this by training VLAs for robotics, improving generalization under various environmental settings. Results so far include work at **Sony AI** (one policy for 100+ OOD vehicles) and an oral paper on the **UR5 robotic arm**.

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Work Experience

2026 – today **AMOR/e lab**, *Postdoctoral Researcher*, Netherlands
Working on multimodal foundation models for robotics within AMOR/e. Research member of the Eindhoven AI Systems Institute (EAISI).

2022 – 2026 **TU Eindhoven**, *PhD Candidate*, Netherlands
- Led projects on dynamic sparsity and OOD generalization (NeurIPS, ICLR, AAMAS).
- Co-applicant, MeluXina compute grant: 80,000 GPU hours (≈€104,000).
- Supervised/mentored 10+ MSc and BSc students; organised reading groups.

2024 – 2025 **Sony AI**, *Research Intern*, Zürich, Switzerland
Part of the Gran Turismo 7 (PlayStation) team for 6 months. The research led to an **oral** paper on RL generalization: a policy able to reliably race with 100+ OOD vehicles.

2023 **University of Alberta**, *Research Visit*, Edmonton, Canada
Visited the Intelligent Robot Learning lab for 5 months, joining Matthew Taylor at Amii. Our work on the UR5 robotic arm contributed to an accepted paper at AAMAS.

2017 **ThuisBaas**, *Research Intern*, Amsterdam, Netherlands
Analyzing the sound level of heat pumps and improving their solar energy model.

Education

2022 – 2026 **PhD Candidate**, *Eindhoven University of Technology*, Netherlands
Research focus: generalization and efficiency in deep RL/robotics via dynamic sparsity.

2018 – 2021 **Master Applied Mathematics**, *Eindhoven University of Technology (TU/e)*
Graduated cum laude. Thesis on multi-agent deep reinforcement learning for Hanabi.

2018 – 2021 **Master Science Education**, *Eindhoven University of Technology*
Acquired the official license to teach mathematics in Dutch high schools.

2014 – 2017 **Bachelor Applied Mathematics**, *Wentworth Institute of Technology & TU/e*
Studied abroad in Boston US, after which I continued in the Netherlands.

Teaching and Mentoring

2026 **Supervisor**, *Casper Adolfse*, MSc student, University of Cambridge
Ongoing project on Affective Robotics

2025 **Honors Academy Coach**, *TU Eindhoven*
Mentoring a group of excellent bachelor students on RL with the LeRobot SO-ARM101.

2025 **Supervisor**, *Quint Bakens*, MSc student
RL for Robotic bell-pepper picking (cum laude)

2024 **Supervisor**, *Camiel Oerlemans*, MSc student, NeurIPS workshop paper
Motion Prediction for Autonomous Driving (cum laude)

2023 **Supervisor**, *Mauk Muller*, MSc student, Thesis
Skip Connections in Sparse Networks

2019 **Mathematics Teacher**, *Van Maerlantlyceum*, Eindhoven
At *Van Maerlant* I improved my teaching skills in classes of higher levels.

2019 **Mathematics Teacher**, *Maaslandcollege*, Oss
During the Education master I learned the teaching craft with this internship.

2018 **Guest Lecturer**, *ASML*, Netherlands, bramgrooten.nl/gastles
Bringing tech-enthusiasm to children with our guest lecture: *Make your own app!*

2017 **Exam Trainer**, *Lyceo*, Netherlands
Mathematics tutor for final year high school students.

2015 **Tutor**, *Phillips Brooks House Association*, Cambridge, MA, United States
Volunteering as a math tutor for children from the rough neighborhood of Mission Hill.

Selected Publications

2025 **B. Grooten**, P. MacAlpine, K. Subramanian, P. Stone, P.R. Wurman. *Out-of-Distribution Generalization with a SPARC: Racing 100 Unseen Vehicles with a Single Policy*. **Oral** at AAAI'26.

2025 **B. Grooten**, F. Hasanov, C. Zhang, Q. Xiao, B. Wu, Z. Atashgahi, G. Sokar, S. Liu, L. Yin, E. Mocanu, M. Pechenizkiy, D. Mocanu. *NeuroTrails: Training with Dynamic Sparse Heads as the Key to Effective Ensembling*. Preprint. arXiv

2025 C. Muslimani, **B. Grooten**, D. Mamillapalli, M. Pechenizkiy, D. Mocanu, M. Taylor. *Boosting Robustness in Preference-Based Reinforcement Learning with Dynamic Sparsity*. AAMAS'25. arXiv

2024 C. Oerlemans, **B. Grooten**, M. Braat, A. Alassi, E. Silvas, D. Mocanu. *LiMTR: Time Series Motion Prediction for Diverse Road Users through Multimodal Feature Integration*. NeurIPS'24 workshop Time Series in the Age of Large Models. arXiv

2024 **B. Grooten**, T. Tomilin, G. Vasan, M. Taylor, A. Mahmood, M. Fang, M. Pechenizkiy, D. Mocanu. *MaDi: Learning to Mask Distractions for Generalization in Visual Deep Reinforcement Learning*. **Oral** at AAMAS'24. arXiv

2024 **B. Grooten**. *Large Learning Agents: Towards Continually Aligned Robots with Scale in RL*. AAMAS'24 Doctoral Consortium. proceedings

2023 A. Nowak, **B. Grooten**, D. Mocanu, J. Tabor. *Fantastic Weights and How to Find Them: Where to Prune in Dynamic Sparse Training*. NeurIPS'23. arXiv

2023 **B. Grooten**, G. Sokar, S. Dohare, E. Mocanu, M. Taylor, M. Pechenizkiy, D. Mocanu. *Automatic Noise Filtering with Dynamic Sparse Training in Deep Reinforcement Learning*. Full-paper at AAMAS'23 & **Spotlight** at ICLR workshop SNN'23. arXiv

2023 W. Wesselink, **B. Grooten**, Q. Xiao, C. de Campos, M. Pechenizkiy. *Nerva: a Truly Sparse Implementation of Neural Networks*. ICLR workshop SNN'23.

2022 **B. Grooten**, J. Wemmenhove, M. Poot, J. Portegies. *Is Vanilla Policy Gradient Overlooked? Analyzing Deep Reinforcement Learning for Hanabi*. Adaptive and Learning Agents workshop at AAMAS'22. arXiv

2021 **B. Grooten**. *Deep Reinforcement Learning for the cooperative card game Hanabi*. Master Thesis. research.tue.nl

Invited Talks

2026 **Openmind Winter School**, *Lean & Adaptive Agents for Generalization*
Universiti Tunku Abdul Rahman. Selangor, Malaysia. Jan 27th.

2025 **EAISI**, *How to Make Sure your Robot is Not Distracted*
Eindhoven AI Systems Institute, Netherlands. Dec 17th.

2025 **VU Amsterdam**, *Lean & Adaptive Agents for Generalization in Deep RL*
Robotics lab. Amsterdam, Netherlands. Dec 9th.

2025 **TU Darmstadt**, *Lean & Adaptive Agents for Generalization in Deep RL*
Jan Peters' IAS lab. Darmstadt, Germany. Dec 5th.

2025 **TU Delft**, *Lean & Adaptive Agents for Generalization in Deep RL*
Delft, Netherlands. Dec 4th.

2024 **Massachusetts Institute of Technology**, *Efficient Focus for Autonomous Agents*
LIDS: Cathy Wu's lab. Cambridge, MA, United States. Aug 19th.

2024 **Sony AI**, *Efficient Focus for Autonomous Agents: Generalization in Deep RL*
Tech Talk Series. Zürich, Switzerland. Jul 24th.

2024 **ETH Zürich**, *Efficient Focus for Autonomous Agents: Generalization in Deep RL*
Computational Robotics Lab. Zürich, Switzerland. Jul 17th. Announcement.

2024 **ML Collective**, *Efficient Focus for Autonomous Agents: Generalization in Deep RL*
Online reading group by Rosanne Liu: "DL: Classics and Trends." Mar 15th. Website.

2024 **Leiden University**, *Efficient Focus for Autonomous Agents*
Leiden, Netherlands. Feb 13th.

2023 **University of Calgary**, *Efficient Focus for Autonomous Agents*
Calgary AB, Canada. Oct 25th. Website.

2023 **University of Alberta**, *Efficient Focus for Autonomous Agents*
Edmonton AB, Canada. Aug 25th. Website. Recording.

2023 **PyData**, *Automatic Noise Filtering*
Eindhoven, Netherlands. Apr 26th. Announcement.

2022 **Jagiellonian University**, *Efficient AI for Autonomous Agents*
Kraków, Poland. Jul 5th.

Honors and Awards

2026 Oral paper at AAAI

2025 Finalist in the *Talking Science* pitch competition. News article.

2024 Oral paper at AAMAS

2024 Scholarship recipient at AAMAS

2023 Spotlight paper: Sparse Neural Networks workshop at ICLR

2023 Scholarship recipient at AAMAS

2021 Cum laude MSc graduation, with a 9/10 for my thesis on *Deep Reinforcement Learning for the cooperative card game Hanabi*

2020 Winner of the international Angry Birds Level Generation contest

2020 Silver medal in the international AI Snakes competition

2018 ASML Technology Scholarship: awarded to 25 master's students annually

2015 Dean's list: top student at Wentworth Institute of Technology

2014 Bèta award: student with highest grades in all STEM courses

2014 Cum laude high school graduation

Grants and Funding

2025 **NWO SURF Grant**, *Snellius*, The Netherlands
Personal application EINF-12945 for 1 million SBU credits on the Netherlands' largest HPC.
Amount: 15,000 GPU hours (≈ €19,500)

2024 **LuxProvide Compute Grant**, *MeluXina HPC*, Luxembourg
Co-applicant on a successful grant to Luxembourg's largest compute cluster.
Amount: 80,000 GPU hours (≈ €104,000)

2023 **Personal Research Grant**, *University of Alberta*, Canada
Allowance for a 5-month visiting scholar position at the Intelligence Robot Learning lab.
Amount: $7000

2022 **NWO SURF Grant**, *Snellius*, The Netherlands
Personal application EINF-3098 for 1 million SBU credits on the Netherlands' largest HPC.
Amount: 15,000 GPU hours (≈ €19,500)

Projects

2023 **Mila**, *Montreal*, Canada, dlrl.ca
Accepted at the DLRL summer school held at Mila.

2022 **European Summer Schools**, *Kraków, Vilnius, Milan*
Participated in three machine learning summer schools: MLSS, EEML, and M2L.

2021 **Serpentine AI**, serpentine.ai
Chairman of the student team which develops AI for e-Sports. Led the team through many international AI programming competitions while maintaining shared codebases.

2020 **Angry Birds Competition**, aibirds.org
Winning team in this challenging level generation contest.

2020 **AI Snakes Competition**, Technical Report
Team-lead of a prize-winning group of developers.

2019 **MIT Battlecode**, battlecode.org
Programming competition hosted by MIT, where we reached the top 30.

Community

Reviewing: ICML 2025, EWRL 2025, AAAI 2025, NeurIPS 2024, Nature Communications 2024, Applied Energy 2023, SNN Workshop 2023, 2022

Organizing: DAI Seminar series 2024, IJCAI Tutorial on Sparse Training 2023

Volunteering: HPC Administrator 2024, PhD Council member 2023