Bram Grooten

PhD candidate in Deep Learning

Passionate PhD researcher, working on dynamic sparse training of neural networks, specifically in the field of deep **reinforcement learning** and robotics. Currently a research intern at **Sony AI** working on generalization in the GT Sophy team. Expected PhD graduation date: February 2026.

🌐 bramgrooten.nl 🔘 github in linkedin 🎓 scholar ✉ b.grooten@tue.nl

Education

2022 – 2026 **PhD Candidate**, *Eindhoven University of Technology*, Netherlands
Research on dynamic sparse training in deep reinforcement learning, improving the efficiency and focus of neural networks, testing on benchmarks such as the UR5 Robotic Arm.

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.

2008 – 2014 **High school**, *Sint-Joriscollege*, Eindhoven, Graduated cum laude
Bèta award: student with the highest grades in STEM courses.

Recent Projects

2023 **Research visit in Alberta**, *Aug - Dec*, UAlberta
Visited the University of Alberta, joining Matthew Taylor's Intelligent Robot Learning (IRL) Lab at the Alberta Machine Intelligence Institute (Amii).

2023 **DLRL at Mila**, *Jul*, dlrl.ca
Accepted at the Deep Learning Reinforcement Learning summer school, which is held at the Mila research institute in Montreal, Canada.

2022 **European Summer Schools**, *Jun - Jul*
Participated in three machine learning summer schools: MLSS, EEML, and M2L. Presented my research there (see poster) and at the Sparse Neural Networks (SNN) workshop.

2020 – 2021 **Serpentine AI**, *Sep - Aug*, serpentine.ai
Chairman of the student team which develops AI for e-Sports. Led the team through many international AI programming competitions. Learned to work with PyTorch and TensorFlow, program in Python, Java, C++, and collaborate via Git.

2020 **Angry Birds Competition**, *Jun - Aug*, AI Birds.org
Winning team in this challenging level generation contest.

2020 **AI Snakes Competition**, *Mar - May*, Technical Report
Leader of the Serpentine team that finished in second place.

2020 **MIT Battlecode**, *Jan - Feb*, battlecode.org
Programming competition hosted by MIT where we reached the top 30.

Work experience

Jul – Nov 2024 **Research Intern**, *Sony AI*, Zürich, Switzerland
Joining the Gran Turismo Sophy team to improve the agent's generalization capabilities.

Feb – Dec 2019 **Math Teacher**, *Maaslandcollege & Van Maerlantlyceum*, Oss & Eindhoven
During the Education master I learned the teaching craft in these two internships.

Jul – Oct 2017 **Researcher**, *ThuisBaas*, Amsterdam, Netherlands
I analyzed the sound level of heat pumps and improved their solar energy model.

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

Publications

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

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 SNN'23, arXiv

2023 W. Wesselink, **B. Grooten**, Q. Xiao, C. de Campos, M. Pechenizkiy. *Nerva: a Truly Sparse Implementation of Neural Networks*. SNN'23, sparseneural.net #28

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

2022 **B. Grooten**, G. Sokar, E. Mocanu, S. Dohare, M. Taylor, M. Pechenizkiy, D. Mocanu. *Towards Implementing Truly Sparse Connections in Deep RL Agents*. SNN'22, sparseneural.net #53

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

2020 **B. Grooten**, B. Tulkens. *Programming in mathematics and physics classes*. Master Thesis, research.tue.nl

2020 **B. Grooten**, I. Schilstra, W. van der Hert, D. van Genuchten. *AI Snakes Competition*. Technical Report, serpentine.ai

Invited Talks

2024 **Wentworth Institute of Technology**, *Efficient Focus for Autonomous Agents*
Boston, MA, United States. Aug 20th. Announcement.

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 "Deep Learning: 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 **LIFE at MIT**, *MaDi: Learning to Mask Distractions from Pixels*
Online reading group "Learning in Foundation Environments." Oct 23rd.

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.

Skills

Technical

Python, Java, C++, Shell scripts
PyTorch, JAX, TensorFlow
Git, Slurm, Linux, HTML, LaTeX

Social

Teamplayer, Educator
Perseverance, Creativity
Leadership, To The Point

Languages

Dutch, English (fluent), Spanish, German (basic)

Awards

2024 AAMAS Scholarship recipient

2023 Spotlight paper: Sparse Neural Networks workshop at ICLR

2023 AAMAS Scholarship recipient

2021 Cum laude MSc graduation

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

2014 Cum laude graduation