

Bram Grooten

PhD candidate in Deep Learning



Passionate PhD researcher, working on dynamic sparse training of neural networks, specifically in the field of reinforcement learning, transfer learning. Currently using the continuous control tasks from MuJoCo and OpenAI Gym to benchmark my ideas. Throughout the PhD project I will translate research findings into the application domain of autonomous driving.

 [github](#)  [linkedin](#)  [scholar](#)
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Education

- 2018 – 2021 **Master of Applied Mathematics**, *Eindhoven University of Technology (TU/e)*
Graduated with honor. Graduation project on multi-agent deep reinforcement learning.
- 2018 – 2021 **Master of Science Education**, *Eindhoven University of Technology*
Acquired the official license to teach mathematics in Dutch high schools.
- 2015 – 2017 **Bachelor of Applied Mathematics**, *Wentworth Institute of Technology & TU/e*
I studied abroad in Boston US, after which I continued in the Netherlands.
- 2008 – 2014 **High school**, *Sint-Joriscollege*, Eindhoven, Graduated with honor
Bèta award: student with the highest grades in STEM courses.

Recent Projects

- 2023 **Research visit**, *Aug - Dec*, [UAlberta](#)
I will visit the University of Alberta to join Matthew Taylor's Intelligent Robot Learning (IRL) Lab at the Alberta Machine Intelligence Institute (Amii).
- 2022 **Summer Schools**, *Jun - Jul*
Accepted at three machine learning summer schools: [MLSS](#), [EEML](#), and [M2L](#). Presented my research there (see [poster](#)) and at the Sparse Neural Networks ([SNN](#)) workshop.
- 2022 **Multi-Agent RL Competition**, *Mar - Jun*, [AI Arena](#)
Achieved a prize-winning top 10 ranking in this global contest, among universities of Alberta, Melbourne, Toronto, Yale, and others. With 4 graduate students we developed a deep RL agent to compete in their multiplayer online battle arena.
- 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**, *Jun - Aug*, [AI Birds.org](#)
Winning team in this challenging level generation contest.

- 2020 **AI Snakes**, *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.
- 2018 – 2020 **Technology Ambassador**, [bramgrooten.nl/gastles](#)
Bringing tech-enthusiasm to children with our guest lecture: Make your own app!

Work experience

- Nov 2021 – **PhD Candidate**, *Eindhoven University of Technology*, Netherlands
now Research focussed on dynamic sparse training in continual reinforcement learning, improving the efficiency of neural networks. The project has applications in autonomous driving.
- Feb – Dec **Math Teacher**, *Maaslandcollege & Van Maerlantlyceum*, Oss & Eindhoven
2019 During the Education master I learned the teaching craft in these two internships.
- Jul – Oct **Researcher**, *ThuisBaas*, Amsterdam, Netherlands
2017 I analyzed the sound level of heat pumps and improved their solar energy model.
- Jul – Dec **Promoter**, *Vandebron*, Eindhoven, Netherlands
2016 Convincing people to switch to sustainable energy.
- Feb – May **Tutor**, *Phillips Brooks House Association*, Cambridge, MA, United States
2015 Volunteering as a tutor for children from the rough neighborhood of Mission Hill.

Publications

- 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, [arXiv](#)
- 2023 W. Wesselink, **B. Grooten**, Q. Xiao, C. de Campos, M. Pechenizkiy. *Nerva: a Truly Sparse Implementation of Neural Networks*, poster at 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*, poster at 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](#)

Skills

Technical

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

Social

Teammaker, Educator
Perseverance, Creativity
Leadership, To The Point

Languages

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

Interests

- Baseball Started in San Diego at age 5. Selected for the Dutch national team in 2017.
- Coding I especially enjoy programming competitions in the field of AI.
- Reading Both fiction and non-fiction. I love the blogs of [WaitButWhy](#).
- Music I find it relaxing to play guitar in the evening.

References

- Alberta **dr. Matthew E. Taylor**, matthew.e.taylor@ualberta.ca, Research visit supervisor
- Luxembourg **dr. Decebal Mocanu**, decebal.mocanu@uni.lu, PhD daily supervisor
- TU/e **prof. dr. Mykola Pechenizkiy**, m.pechenizkiy@tue.nl, PhD supervisor