Rein Houthooft

Netflix Research, USA
Phone: +1 (415) 254 5315

Nationality: Belgium (USA permanent resident)

email: rein.houthooft@gmail.com
URL: reinhouthooft.github.io
be.linkedin.com/in/reinhouthooft
scholar.google.com/citations?user=HBztuGIAAAAJ

Summary

Machine learning research and engineering leadership experience in building high-throughput online personalization systems. Domain expertise in reinforcement learning, large language models, generative AI, and recommendation systems. See scholar.google.com/citations?user=HBztuGIAAAAJ for an overview of my past research.

Current position

Research Scientist, Netflix Research . . . . . research.netflix.com
Leading the research and development of generative recommender systems using LLMs:

- Pioneered and built Netflix's first LLM-based ranker model through SFT and post-training.
- Architected a unified homepage experience by consolidating various recommendation algorithms into a single, efficient transformer model.
- Enabled generative retrieval and search capabilities by integrating language understanding with collaborative filtering data in a single LLM.
- Optimized for long-term recommendation objectives and user satisfaction through reinforcement learning techinques.

Experience

2018-2020 *Head of AI*, Happy Elements, Inc. . . . . en.happyelements.com/ai

With over 100 million unique monthly active users, Happy Elements is the producer of one of the largest active mobile games worldwide. In 2018 I joined the company to co-found and co-lead its AI lab with the goal of optimizing mobile gaming experience through machine learning. Since its inception, the team grew to over 20 members, with presence both in Beijing and San Francisco. Through the development of algorithms, systems, and models as well as the supporting production infrastructure, the AI lab is able to significantly impact company revenue by increasing the overall player life-time value and retention.

2017-2018 *Research Scientist*, OpenAI . . . . . www.openai.com

Research into deep reinforcement learning, particularly solving the exploration-exploitation trade-off problem through curiosity-based learning, generative modeling, and meta-learning. Part of my responsibilities also included mentoring research interns within the field. The results of this research were applied to solve to simulated robotics and game playing problems.

2014-2017 *Doctoral Researcher*, imec . . . . . www.imec-int.com

Collaboration project with CNH Industrial to build a computer vision system based on structured prediction to guide autonomous agricultural vehicles.

2016 *Machine Learning Research Intern*, OpenAI . . . . . www.openai.com

Research into deep reinforcement learning and generative modeling.

2012 *Software Engineering Intern*, Solvace . . . . . www.solvace.com

First engineer at the start-up Solvace to build a collaboration platform to facilitate knowledge sharing across businesses. Solvace got acquired by Efeso Consulting.

2011 *Combinatorial Optimization Researcher*, KU Leuven . . . . . set.kuleuven.be/codes

Collaboration project with ArcelorMittal to optimize supply chain logistics using linear programming and meta-heuristics.

Education

2014-2017 *Ph.D. in Computer Science and Engineering* . . . . . Universiteit Gent, Belgium

Research on structured prediction, computer vision, and deep reinforcement learning applied to simulated robotics and autonomous vehicles.

2016 *Visiting Student Researcher* . . . . . University of California—Berkeley, USA

Deep reinforcement learning research with Pieter Abbeel at the Berkeley AI Research Lab (BAIR).

2012-2014 *M.Sc. in Computer Science and Engineering* . . . . . Universiteit Gent, Belgium

2008-2012 *B.Sc. in Industrial Engineering* . . . . . Associatie KU Leuven, Belgium