Carl Hvarfner

PhD Student · Lund University · WASP Sweden

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Education

Lund University   *Lund, Sweden*
PH.D. - MACHINE LEARNING   *Sept. 2020 - 2024/2025*
- Research Topics: Machine Learning, Bayesian Optimization, Black-box Optimization, AutoML
- Coursework: Mathematics, Statistics, Machine Learning. Mandated 90 ETCS of post-graduate level coursework.
- Supervisor: Dr. Luigi Nardi

Lund University   *Lund, Sweden*
INTEGRATED B.SC. AND M.SC. - INDUSTRIAL ENGINEERING   *Sept. 2015 - June 2020*
- Coursework: Statistics, Optimization and Financial Mathematics
- Thesis: Improving High-Risk Consumer Credit Scoring with Financial Transaction Data
- Thesis Advisor: Dr. Erik Lindström
- GPA: 4.92 / 5.00

University of Melbourne   *Melbourne, Australia*
INTERNATIONAL STUDENT EXCHANGE PROGRAM   *July. 2018 - November 2018*
- Coursework: Stochastic Processes, Time-series Analysis

Employment

Bliq   *Stockholm, Sweden*
DATA SCIENTIST   *Jan. 2020 - June 2020*
- Developed rules and Machine Learning-based approaches for categorizing transaction data
- Built pipelines to enable fully automated credit decisions solely based on transaction data

McKinsey & Company   *Stockholm, Sweden*
JUNIOR ASSOCIATE INTERN   *June. 2019 - Nov.2019*
- Tasked on two projects spanning five months, working in a fast-paced and challenging environment
- Main responsibilities included data handling and manipulation, modelling and workshop planning

Kearney   *Stockholm, Sweden*
BUSINESS ANALYST INTERN   *Feb. 2019 - Apr.2019*
- Tasked with producing project-related research, presentation material, and internal workstreams

Publications

ACCEPTED

Carl Hvarfner, Frank Hutter, and Luigi Nardi. Joint Entropy Search for Maximally-Informed Bayesian Optimization. *Neural Information Processing Systems*, 2022.

Carl Hvarfner, Danny Stoll, Artur Souza, Marius Lindauer, Frank Hutter, and Luigi Nardi. πBO: Augmenting Acquisition Functions with User Beliefs for Bayesian Optimization. *The Tenth International Conference on Learning Representations*, 2022.

Matthias Mayr, **Carl Hvarfner**, Konstantinos Chatzilygeroudis, Luigi Nardi and Volker Krueger. Learning Skill-based Industrial Robot Tasks with User Priors. *IEEE International Conference on Automation Science and Engineering*, 2022.

PREPRINTS

Carl Hvarfner, Erik Hellsten, Frank Hutter, and Luigi Nardi. Self-Correcting Bayesian Optimization through Bayesian Active Learning. ArXiv, 2023. *Under review.*

Neeratyoy Mallik, Eddie Bergman, **Carl Hvarfner**, Danny Stoll, Maciej Janowski, Marius Lindauer, Luigi Nardi, Frank Hutter. PriorBand: HyperBand + Human Expert Knowledge. rXiv, 2023. *Under review.*

Thesis

Jon Stålhammar* and **Carl Hvarfner***. Improving High-Risk Consumer Credit Scoring with Financial Transaction Data. *Master Thesis (Advisor: Erik Lindström).* 2020.

Teaching Experience

Fall -22	**Advanced Topics in Machine Learning**, Teaching Assistant
Spring -22	**Monte Carlo and Empirical Methods for Stochastic Inference**, Teaching Assistant
Fall -21, -22	**Financial Statistics**, Teaching Assistant
Fall -21, -22	**Applied Machine Learning**, Teaching Assistant
Spring -21	**Artificial Intelligence**, Teaching Assistant
Spring -21	**Introductory Programming in Python**, Teaching Assistant
Fall -16	**Linear Algebra**, Supplementary Instructor
Fall -16	**Real Analysis**, Supplementary Instructor

Software Contributions

BoTorch, Bayesian Optimization in PyTorch

NePS, Neural Pipeline Search

Hypermapper, Practical Design Space Exploration

SMAC3, Sequential Model-based Algorithm Configuration

ConfigSpace, A DSL to manage Configuration Spaces

Awards and Honors

2020-2025	**Wallenberg Artifical Intelligence, Autonomous Systems and Software Program**, Fully funded doctoral position
2022	**NeurIPS 2022 Scholar Award**, Travel grant
2022	**G-Research Early Career Research Grant**, Travel grant