

Karlson Pfannschmidt

MACHINE LEARNING RESEARCHER

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Experience

Smart-GM, Software Innovation Campus Paderborn

RESEARCH ASSISTANT

Paderborn

2020–present

- Development of an assistance system for the recommendation of business models.
- Design of machine learning techniques applicable for learning from business model data.

Intelligent Systems and Machine Learning Group, Prof. Hüllermeier

RESEARCH ASSISTANT

Paderborn

2015–2020

- Development and evaluation of new neural network architectures capable of modelling preferences (choices and rankings).
 - Implementation of a simulation pipeline to compare a variety of machine learning models in a cluster computing environment.
 - Establish the expressiveness of the proposed approaches by theoretical analysis.
- Work on an algorithm for multi-label classification in a large-scale environment.
- Devising a method of evaluating the importance of laboratory tests in medicine using game-theoretical concepts.

Distributed Systems Group, Prof. Scheideler

STUDENT RESEARCH ASSISTANT

Paderborn

2011–2015

- Empirical analysis of bandit trust algorithms.
- Development of a robust Bayesian bandit algorithm.

Skills

Machine Learning Neural Networks, Gaussian Processes, Bayesian Optimization, Reinforcement Learning, Preference Learning

MLOps PyTorch, TensorFlow, scikit-learn, MLFlow, SQLAlchemy

DevOps Docker, Git, GitHub Actions, Singularity, TravisCI

Programming Python, R, SQL, C++, JAVA, LaTeX

Languages German (native), English (fluent), French (basic), Spanish (basic)

Open-Source Projects

CS-Rank

github.com/kiudee/cs-ranking

Feb. 2018–present

CREATOR/MAINTAINER

- Implements state-of-the-art context-dependent ranking and choice algorithms in Python.
- Modular architecture available in TensorFlow and PyTorch.

Bayes-skopt

github.com/kiudee/bayes-skopt

Sep. 2019–present

CREATOR/MAINTAINER

- General purpose hyperparameter optimization library specifically geared towards tuning of very noisy target functions.
- Fully Bayesian treatment of model hyperparameters and acquisition functions.

Chess Tuning Tools

github.com/kiudee/chess-tuning-tools

Jan. 2020–present

CREATOR/MAINTAINER

- Special purpose chess engine parameter tuning software with an easy to use command line interface.
- Employed in the fine-tuning of the well-known Leela Chess Zero engine.

Publications

CONFERENCE PROCEEDINGS

Learning Choice Functions via Pareto-Embeddings

Karlson Pfannschmidt, Eyke Hüllermeier

KI, 2020

Extreme F-measure Maximization using Sparse Probability Estimates

Kalina Jasinska, Krzysztof Dembczynski, Róbert Busa-Fekete, Karlson Pfannschmidt, Timo Klerx, Eyke Hüllermeier

ICML, 2016

Evaluating Tests in Medical Diagnosis: Combining Machine Learning with Game-Theoretical Concepts

Karlson Pfannschmidt, Eyke Hüllermeier, Susanne Held, Reto Neiger

IPMU, 2016

PREPRINTS

Efficient time stepping for numerical integration using reinforcement learning

Michael Dellnitz, Eyke Hüllermeier, Marvin Lücke, Sina Ober-Blöbaum, Christian Offen, Sebastian Peitz, Karlson Pfannschmidt

2021

Learning Choice Functions: Concepts and Architectures

Karlson Pfannschmidt, Pritha Gupta, Eyke Hüllermeier

2020

Deep Architectures for Learning Context-dependent Ranking Functions

Karlson Pfannschmidt, Pritha Gupta, Eyke Hüllermeier

2018

Education

Doctorate Degree (in progress)

PADERBORN UNIVERSITY

Thesis (in progress): Learning Choice and Ranking Functions

Paderborn, Germany

Apr. 2015–present

Master of Computer Science

PADERBORN UNIVERSITY

Thesis: Solving the Aggregated Bandits Problem

Paderborn, Germany

Sep. 2012–Apr. 2015

Bachelor of Computer Science

PADERBORN UNIVERSITY

Thesis: Learning in Adversarial Environments

Paderborn, Germany

2008–Sep. 2012

Extracurricular Activity

Leela Chess Zero Open Source Project

CORE MEMBER

lczero.org

Jan. 2020–present

- Developed a general purpose optimization library with application to computer chess.

- Active contributor to the open source project.

Presentation

TNG | Big Techday 12

Munich, Germany

June 7th, 2019

Co-PRESENTER FOR <LCZERO, THE NEURAL NETWORK-BASED CHESS ENGINE>

- Introduced the inner workings of the chess engine LCZero to a tech audience.
- Present the differences between traditional chess engines and neural network based ones.

Program Committees

2021 **External Reviewer**, International Conference on Machine Learning (ICML)

Vienna, Austria

2018 **Local Chair**, European Conference on Data Analysis

Paderborn, Germany