Fabio Ferreira | Resume

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Experience

Machine Learning Lab, University of Freiburg **Freiburg, Germany**
Doctoral Researcher *Since 2020*
Research in meta-learning for automated pretraining and finetuning, automated data augmentation, and self-supervised learning. Authored > 10 research papers published at top-tier conferences (four conference papers as first author at ICML and ICLR) and supervised > 10 students. PhD supervisor: Frank Hutter. Thesis: Meta-Learning and Synthetic Data for Automated Pretraining and Finetuning

Amazon Web Services (AWS) AI **Seattle, USA**
Applied Research Scientist Intern *11/23–02/24*
Research in meta-learning models for cost-aware performance prediction of ML algorithms using prior performance data. I developed methods to select and configure well-performing model ensembles under time constraints.

Interactive Perception and Robot Learning Lab, Stanford University **Stanford, USA**
Visiting Student Researcher *11/18–06/19*
Learning neural physics simulators for visual robotic manipulation of rigid objects using relational inductive biases in Graph Neural Networks. Supervisor: Jeannette Bohg.

Baden-Wuerrtemberg Cooperative State University **Karlsruhe, Germany**
Visiting Lecturer *05/18–08/18*
Designed and taught a machine learning introductory course for business information system degree students.

High Performance Humanoid Technologies Lab, KIT **Karlsruhe, Germany**
Research Assistant *10/17–10/18*
Research in deep learning for robotic perception and cognition, advice of staff in deep learning and TensorFlow-related questions, Supervisor: Tamim Asfour

Education

University of Freiburg **Freiburg, Germany**
PhD in Computer Science *2020-2025*

Karlsruhe Institute of Technology **Karlsruhe, Germany**
M. Sc. in Computer Science (GPA: 3.8/4.0, top 15%) *2016-2019*
focus: Machine Learning & Robotics, Thesis: Learning Dynamics Models for Rigid Objects from Image Input using Relational Inductive Biases

Karlsruhe University of Applied Sciences **Karlsruhe, Germany**
B. Sc. in Computer Science (GPA: 3.8/4.0, with distinction, top 5%) *2013-2016*
Thesis: Optimal Convolutional Neural Network Architectures for Image Defect Classification

Advanced Training, Gottlieb–Daimler–Schule 2 **Sindelfingen, Germany**
State-Certified CS/EE Technical Engineer, graduated best of class *2010-2012*

Apprenticeship, Deutsche Telekom AG **Sindelfingen, Germany**
IT systems engineer *2006-2009*

Scholarships

- German Academic Scholarship Foundation scholarship (0.5% acceptance rate) (2015–2019)
- Baden-Württemberg-Stiftung scholarship (2018–2019)
- e-fellows scholarship by Capgemini SE (2017–2018) and TRUMPF Group (2018–2019)

Software and Language Skills

Programming: Python, Java, C, C++ **Scientific Tools:** NumPy, SciPy, LaTeX

Machine Learning: PyTorch, TensorFlow **Data Handling:** Pandas, SQL & Co

DevOps: Git, GitHub Workflows, TravisCI **Cloud & HPC:** AWS, Slurm, Docker

Languages: English (C2), German (C2), Portuguese (C2)

Selected Publications

Meta-Learning: Data Augmentation and Synthetic Data

Beyond Random Augmentations: Pretraining with Hard Views
Ferreira, F.*, *Rapant**, *I., Franke, J. and Hutter, F.* *2025*
International Conference on Learning Representations (ICLR) 2025

One-shot World Models Using a Transformer Trained on a Synthetic Prior
***F. Ferreira**, M. Schlageter, R. Rajan, A. Biedenkapp and F. Hutter* *2024*
Workshop on Open-World Agents at NeurIPS 2024

Learning Synthetic Environments and Reward Networks for Reinforcement Learning
***F. Ferreira**, T. Nierhoff, A. Sälinger and F. Hutter* *2022*
International Conference Learning Representations (ICLR) 2022

On the Importance of Hyperparameters and Data Augm. for Self-Supervised Learning
*D. Wagner, **F. Ferreira**, D. Stoll, R. T. Schirrmeister, S. Müller and F. Hutter* *2022*
International Conference on Machine Learning (ICML) Pre-Training Workshop 2022

Meta-Learning for Automated Model Selection and Finetuning

Quick-Tune: Quickly Learning Which Pretrained Model to Finetune and How
*Arango Pineda, S. and **Ferreira, F.** and Kadra, A. and Grabocka, J. and Hutter, F.* *2024*
International Conference on Learning Representations (ICLR) 2024, oral presentation

Quick-Tune-Tool: A Practical Tool for Automatically Finetuning Pretrained Models
*I. Rapant, L. Purucker, **F. Ferreira**, S. P. Arango, A. Kadra, J. Grabocka, F. Hutter* *2024*
International Conference on Automated Machine Learning - Workshop Track 2024

Transfer Learning for Finetuning Large Language Models
*T. Strangmann, L. Purucker, J. K. H. Franke, I. Rapant, **F. Ferreira** and F. Hutter* *2024*
NeurIPS Workshop on Adaptive Foundation Models 2024

Zero-Shot AutoML with Pretrained Models
F. Ferreira*, *E. Öztürk**, *H. S. Joma**, *L. Schmidt-Thieme, J. Grabocka, F. Hutter* *2022*
International Conference on Machine Learning (ICML) 2022, spotlight presentation

Winning Solutions and Post-Challenge Analyses of the ChaLearn AutoDL Challenge '19
*Liu, Z., Pavao, A., Xu, Z., Escalera, S., **Ferreira, F.**, Guyon, I. and others* *2021*
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2021

Robotics

UniGrasp: Learning a Unified Model to Grasp with N-Fingered Robotic Hands
*L. Shao, **F. Ferreira****, *M. Jorda**, *V. Nambiar**, *O. Khatib and J. Bohg et al.* *2020*
IEEE Robotics and Automation Letters, presented at ICRA 2020

Encoding, Recalling, and Predicting Episodic Experiences for Robot Action Execution
F. Ferreira*, *J Rothfuss**, *Eren. E. Aksoy, Y. Zhou and T Asfour* *2018*
IEEE Robotics and Automation Letters 2018, presented at IROS 2018

* equal contribution