

Fabio Ferreira

Curriculum Vitae

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Person

Place of birth Calw, Germany
Citizenships German, Portuguese

Education

- 2020-2025 **Doctoral Student**, *Machine Learning Lab, University of Freiburg*, Freiburg im Breisgau, Germany.
Thesis Title: Meta-Learning and Synthetic Data for Automated Pretraining and Finetuning, Supervisor: Prof. Dr. Frank Hutter (submitted)
- 2016-2019 **M. Sc. in Computer Science**, *Karlsruhe Institute of Technology*, Karlsruhe, Germany, *GPA: 3.8/4.0 (top 15%), Focus: Machine Learning and Robotics*.
Thesis Title: Learning Dynamics Models fo Rigid Objects from Image Input using Relational Inductive Biases, Supervisors: Prof. Dr. Tamim Asfour and Prof. Dr. Jeannette Bohg
- 2013-2016 **B. Sc. in Computer Science**, *Karlsruhe University of Applied Sciences*, Karlsruhe, Germany, *GPA: 3.8/4.0, with distinction (top 5%), Focus: Software Engineering and Machine Learning*.
Thesis Title: Optimal Convolutional Neural Network Architectures for Image Defect Classification, Supervisor: Prof. Dr. Norbert Link
- 2010-2012 **State-Certified Technical Engineer**, *Advanced training, Gottlieb–Daimler–Schule 2 – Fachschule für Technik*, Sindelfingen, Germany, *GPA: 3.9/4.0 (graduated best in class), Focus: Computer Science and Electrical Engineering*.
- 2006-2009 **IT systems engineer**, *Apprenticeship, Deutsche Telekom AG*, Sindelfingen, Germany, *Focus: Information Processing*.

Professional Appointments

- 11/23–02/24 **Applied Research Scientist Intern**, *Amazon Web Services (AWS), AI Deep Engine-Science, AutoGluon Team*, Seattle, WA, USA.
Project: Meta-Learning Optimal Ensembles, Supervisor: Nick Erickson
- 11/18–06/19 **Visiting Student Researcher**, *Interactive Perception and Robot Learning Lab, Stanford AI Lab, Stanford University*, Stanford, CA, USA.
Project: Learning Visual Dynamics Models of Rigid Objects using Relational Inductive Biases (Master's thesis research), Supervisor: Prof. Dr. Jeannette Bohg
- 05/18–08/18 **Visiting Lecturer**, *Baden-Wuerttemberg Cooperative State University (DHBW Karlsruhe)*, Karlsruhe, Germany.
Designed and taught a machine learning introductory course for business information system degree students with a fellow student (course material)

10/17–10/18 **Research Assistant**, *High Performance Humanoid Technologies Lab*, Karlsruhe Institute of Technology, Karlsruhe, Germany.

Research in deep learning for robotic perception and cognition, advice of staff in deep learning and TensorFlow-related questions, Supervisor: Prof. Dr. Tamim Asfour

Publications

Journals

- [1] Z. Liu, A. Pavao, Z. Xu, S. Escalera, **Ferreira, F.**, I. Guyon, S. Hong, F. Hutter, R. Ji, J. C. S. J. Junior, G. Li, M. Lindauer, Z. Luo, M. Madadi, T. Nierhoff, K. Niu, C. Pan, D. Stoll, S. Treguer, J. Wang, P. Wang, C. Wu, Youcheng X., A. Zela, and Y. Zhang. Winning solutions and post-challenge analyses of the chlearn autodl challenge 2019. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 43(9):3108–3125, 2021.
- [2] L. Shao, **F. Ferreira***, M. Jorda*, V. Nambiar*, J. Luo, E. Solowjow, J. A. Ojea, O. Khatib, and J. Bohg. UniGrasp: Learning a Unified Model to Grasp with N-Fingered Robotic Hands. *IEEE Robotics and Automation Letters and ICRA*, 2020.
- [3] **F. Ferreira***, J Rothfuss*, Eren. E. Aksoy, Y. Zhou, and T Asfour. Deep Episodic Memory: Encoding, Recalling, and Predicting Episodic Experiences for Robot Action Execution. *IEEE Robotics and Automation Letters and IROS*, 4(3):4007–4014, 2018.

Conferences

- [4] **Ferreira, F.***, I. Rapant*, J. Franke, and F. Hutter. Beyond Random Augmentations: Pretraining with Hard Views. In *Proceedings of the International Conference on Learning Representations (ICLR) 2025*.
- [5] S. Arango Pineda, **Ferreira, F.**, A. Kadra, J. Grabocka, and F. Hutter. Quick-Tune: Quickly Learning Which Pretrained Model to Finetune and How. In *Proceedings of International Conference on Learning Representations (ICLR) 2024*.
- [6] E. Öztürk*, **F. Ferreira***, H. S. Joma*, L. Schmidt-Thieme, J. Grabocka, and F. Hutter. Zero-Shot AutoML with Pretrained Models. In *Proceedings of International Conference on Machine Learning (ICML) 2022*.
- [7] **F. Ferreira**, T. Nierhoff, A. Sälinger, and F. Hutter. Learning Synthetic Environments and Reward Networks for Reinforcement Learning. In *Proceedings of International Conference Learning Representations (ICLR) 2022*.
- [8] A. El Baz, I. Ullah, E. Alcobaça, A. C. P. L. F. Carvalho, H. Chen, **F. Ferreira**, H. Gouk, C. Guan, I. Guyon, T. Hospedales, S. Hu, M. Huisman, F. Hutter, Z. Liu, F. Mohr, E. Öztürk, J. N. van Rijn, H. Sun, X. Wang, and W. Zhu. Lessons learned from the neurips 2021 metadl challenge: Backbone fine-tuning without episodic meta-learning dominates for few-shot learning image classification. In *Proceedings of the NeurIPS 2021 Competitions and Demonstrations Track*, pages 80–96.
- [9] M. Ulrich, S. Walther, J. Rothfuss, and **F. Ferreira**. Forward Looking P. In *Proceedings of the 8th OptionMetrics Research Conference (ORC2019)*, 2019.
- [10] S. Ottenhaus, D. Renninghoff, R. Grimm, **F. Ferreira**, and T. Asfour. Visuo-Haptic Grasping of Unknown Objects based on Gaussian Process Implicit Surfaces and Deep Learning. In *IEEE-RAS International Conference on Humanoid Robots (Humanoids) 2019*.

Workshops

- [11] **F. Ferreira**, M. Schlageter, R. Rajan, A. Biedenkapp, and F. Hutter. One-shot World Models Using a Transformer Trained on a Synthetic Prior. In *First Workshop on Open-World Agents at the Thirty-Eighth Annual Conference on Neural Information Processing Systems 2024*.

- [12] T. Strangmann, J. K. H. Franke, L. Purucker, I. Rapant, **F. Ferreira**, and F. Hutter. Transfer Learning for Finetuning Large Language Models. In *NeurIPS Workshop on Adaptive Foundation Models 2024*.
- [13] I. Rapant, L. Purucker, **F. Ferreira**, S. P. Arango, A. Kadra, J. Grabocka, and F. Hutter. Quick-Tune-Tool: A Practical Tool and its User Guide for Automatically Finetuning Pretrained Models. In *Third International Conference on Automated Machine Learning - Workshop Track 2024*.
- [14] D. Wagner, **F. Ferreira**, D. Stoll, R. T. Schirrmeyer, S. Müller, and F. Hutter. On the Importance of Hyperparameters and Data Augmentation for Self-Supervised Learning. In *International Conference on Machine Learning (ICML) Pre-Training Workshop 2022*.
- [15] **F. Ferreira**, L. Shao, T. Asfour, and J. Bohg. Learning Visual Dynamics Models of Rigid Objects using Relational Inductive Biases. In *Neural Information Processing Systems (NeurIPS) Graph Representation Learning Workshop 2019*.

Technical Reports & Pre-prints

- [16] J. Rothfuss, **F. Ferreira**, S. Boehm, S. Walther, M. Ulrich, T. Asfour, and A. Krause. Noise Regularization for Conditional Density Estimation.
- [17] **F. Ferreira***, J. Rothfuss*, S. Walther, and M. Ulrich. Conditional Density Estimation with Neural Networks: Best Practices and Benchmarks. 2019.
- [18] **F. Ferreira***, J. Rothfuss*, E. E. Aksoy, Y. Zhou, and T. Asfour. Introducing the Simulated Flying Shapes and Simulated Planar Manipulator Datasets. 2018.

Theses

- [19] **F. Ferreira**, T. Asfour, and J. Bohg. Learning Dynamic Models of Rigid Objects from Image Input using Relational Inductive Biases. Master's thesis, Stanford University, Computer Science Department, Stanford Artificial Intelligence Lab, Interactive Perception and Robot Learning Lab, 2019.
- [20] **F. Ferreira**, M. Klar, N. Link, and A. Laubenheimer. Optimal convolutional neural network architectures for defect classification in images. Bachelor's thesis, Robert Bosch Research Department, Renningen, undisclosed due to NDA until 2021, 2016.

Scholarships

- 12/18–05/19 **e-fellows Computer Science Scholarship**, *Financial and mentorship sponsorship received by TRUMPF Group.*
- 10/18–03/19 **Baden-Württemberg-Stiftung**, *interACT student research grant in the amount of 5,400\$ to support my master thesis conducted at Stanford AI Lab..*
- 10/18–03/19 **German Academic Scholarship Foundation**, *Student research grant in the amount of 6,200\$ to support my master thesis conducted at Stanford AI Lab.*
- 12/17–05/18 **e-fellows Computer Science Scholarship**, *Financial and mentorship sponsorship received by Capgemini SE.*
- 2015–2019 **German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)**, *suggested by the university to this highly selective scholarship program (best 1% of students are admitted).*

Presentations

Orals

ICLR 2024.

Quick-Tune: Quickly Learning Which Pretrained Model to Finetune and How (1.2% of submissions)

Spotlight

ICML 2022.

Zero-Shot AutoML with Pretrained Models (20% of submissions)

Invited Talks

AAAI 2021 Meta-Learning Workshop.

Learning Synthetic Environments for RL with Evolution Strategies

Max Plank Institute for Intelligent Systems, Perceiving Systems department.

Learning Visual Dynamics Models of Rigid Objects Using Relational Inductive Biases, in 2019

Professional Service

Workshop Chairing

Organizer.

Workshop on Meta-Learning (MetaLearn) at NeurIPS 2021 and 2022.

Reviewing

Invited Workshop Proposal Reviewer.

NeurIPS 2023

Paper Submission Reviewer.

NeurIPS 2023 Workshop Reviewing, NeurIPS (2020-2024), ICLR (2021-2025), ICML (2024), AAAI (2021), IROS (2019, 2021), ICRA (2019), RA-L (2020-2022)

Work Experience

2020–present **Machine Learning Consultant**, *AKKA GmbH & Co. KGaA*.
Machine learning counseling

2013–2019 **Working Student**, *AKKA GmbH & Co. KGaA*.
Software development and machine learning counseling

2012–2013 **Software Developer**, *MBtech Group GmbH & Co. KGaA*.
Software development in exhaust aftertreatment for Daimler AG with Matlab and Simulink

2010 **Network Administrator**, *Sparkassen-IT GmbH & Co. KG*.
Configuration of Cisco Systems network devices, Linux server administration

Other Achievements

09/2017 **HackX 2017 Hackathon**, *Cologne, Germany, Microsoft Headquarters*, Tree-based representation of news articles based on Microsoft Azure Cognitive Services - Prototype created during the hackathon (sponsors: Microsoft, Handelsblatt, FlowFact), awarded for the best innovation and best pitch, <https://www.hackathon.com/event/hackx—artificial-intelligence-hackathon-2017-36159341564>.

- 03/2017 **StartHack 2017 Hackathon**, *St. Gallen, Switzerland, University of St. Gallen*, Participated in an AI challenge by Deutsche Bank at the StartHack Hackathon which was held in St. Gallen. Our team implemented a coupon recommendation prototype based on bank account expenses. The application recommends vouchers based on your bank account expenses and current location, so that when purchases are detected on the credit card, a suitable voucher will be provided the next time the customer logs into his Deutsche Bank account, <https://starthack2017.devpost.com>.
- 11/2016 **Speaker at the Deep Learning Student Talk**, *Karlsruhe University of Applied Sciences*, Both Prof. Link and Prof. Laubenheimer invited me as a speaker (along with two other alumni) to the first Deep Learning Student Talk with approximately 50 attendees. During the 60 minute presentation, I gave an introduction to the basics of Deep Learning and provided insights into my bachelor thesis results, <https://ferreirafabio.github.io/data/posterdl.pdf>.

Software Language Skills

Language	Level	Experience
Python	professional	5+ years
Java	practitioner	2 years
Matlab	practitioner	2 years
C/C++	experienced beginner	2 years
SQL	beginner	1 year

Software and Machine Learning Skills

Frameworks/ Packages/ Platforms	PyTorch, numpy, pandas, sklearn, AWS, TensorFlow (used to), Slurm Workload Manager, MOAB Workload Manager
Testing	Unittests, CI, statistical and functional testing

Languages

German	Native speaker
Portuguese	Native speaker
English	IELTS level 7.5
Spanish	Beginner

Interests

Reading	Besides working and studying, I use a considerable amount of my time to read books and listen to podcasts and audio books.
Sports	I pursue Powerlifting on a competitive basis and occasionally play Volleyball and Tennis. In the summers, I enjoy hiking and climbing in the Alps and the Black Forest region.