

Fabio Ferreira

Curriculum Vitae

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Person

Place of birth Calw, Germany

Citizenships German, Portuguese

Education

01/20–now **Doctoral Student**, *Machine Learning Lab, University of Freiburg.*

Towards Learning Algorithms that Generate Effective Learning Data and Environments

10/16–10/19 **M. Sc. in Computer Science**, *Karlsruhe Institute of Technology, GPA: 3.8/4.0 (graduated among top 15%).*

Machine Learning, Robotics

2013–2016 **B. Sc. in Computer Science**, *Karlsruhe University of Applied Sciences, GPA: 3.8/4.0, with distinction (graduated among top 5%).*

Software Engineering and Computer Vision

2010–2012 **State-Certified Technical Engineer**, *Advanced training, Gottlieb–Daimler–Schule 2 – Fachschule für Technik, GPA: 3.9/4.0 (graduated best in class).*

Electrical Engineering, Computer Science

2006–2009 **IT systems engineer**, *Apprenticeship, Deutsche Telekom AG.*

Telecommunications, Information Processing

Professional Appointments

11/18–06/19 **Visiting Student Researcher**, *Interactive Perception and Robot Learning Lab, Stanford AI Lab, Stanford University.*

Master's thesis research

05/18–08/18 **Visiting Lecturer**, *Baden-Wuerttemberg Cooperative State University (DHBW Karlsruhe), Karlsruhe.*

Designed and taught a machine learning introductory course for business information system degree students with a fellow student

Link https://github.com/ferreirafabio/intro_to_ml_dhbw

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

Research in deep learning for robotic perception and cognition, advice of staff in deep learning and TensorFlow-related questions

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] **F. Ferreira**, T. Nierhoff, A. Saelinger, and F. Hutter. Learning Synthetic Environments and Reward Networks for Reinforcement Learning. In *Proceedings of International Conference Learning Representations (ICLR) 2022*.
- [5] **F. Ferreira**, L. Shao, T. Asfour, and J. Bohg. Learning Visual Dynamics Models of Rigid Objects using Relational Inductive Biases. In *Proceedings of the 33rd Conference on Neural Information Processing Systems (NeurIPS 2019) within the Graph Representation Learning Workshop*.
- [6] M. Ulrich, S. Walther, J. Rothfuss, and **F. Ferreira**. Forward Looking P. In *Proceedings of the 8th OptionMetrics Research Conference (ORC2019)*, 2019.
- [7] 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 *Proceedings of 2019 IEEE-RAS International Conference on Humanoid Robots (Humanoids)*.

Technical Reports & Pre-prints

- [8] E. Oeztuerk*, **F. Ferreira***, H. S. Joma*, L. Schmidt-Thieme, J. Grabocka, and F. Hutter. Zero-Shot AutoML with Pretrained Models. submitted to ICML 2022.
- [9] J. Rothfuss, **F. Ferreira**, S. Boehm, S. Walther, M. Ulrich, T. Asfour, and A. Krause. Noise Regularization for Conditional Density Estimation.
- [10] **F. Ferreira***, J. Rothfuss*, S. Walther, and M. Ulrich. Conditional Density Estimation with Neural Networks: Best Practices and Benchmarks. 2019.
- [11] **F. Ferreira***, J. Rothfuss*, E. E. Aksoy, Y. Zhou, and T. Asfour. Introducing the Simulated Flying Shapes and Simulated Planar Manipulator Datasets. 2018.

Theses

- [12] **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.
- [13] **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 mentorial 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 mentorial sponsorship received by Capgemini SE.*
- 2015–2019 **German Academic Scholarship Foundation**, *Admission in November 2015, suggested by the university for exceptional student performances.*

Presentations

Spotlights

- 2022 **ICML.**
Zero-Shot AutoML with Pretrained Models

Invited Talks

- 2021 **AAAI 2021 Meta-Learning Workshop.**
Learning Synthetic Environments for RL with Evolution Strategies
- 2019 **Max Plank Institute for Intelligent Systems, Perceiving Systems department.**
Learning Visual Dynamics Models of Rigid Objects Using Relational Inductive Biases, (link)

Professional Service

Workshop Chairing

- 2021 **Co-Lead Organizer.**
Workshop on Meta-Learning (MetaLearn) at NeurIPS.

Reviewing

- 2020–2021 **Invited Reviewer for the following conferences in machine learning and robotics.**
NeurIPS, AAAI, ICLR, IROS, ICRA, RA-L

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
- 2010–2010 **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	4 years
Java	practitioner	2.5 years
Matlab	practitioner	2.5 years
C/C++	experienced beginner	2.5 years
SQL	beginner	1 year

Software and Machine Learning Skills

Frameworks/ Packages/ Platforms	PyTorch, TensorFlow, jax, numpy, pandas, sklearn, AWS, Microsoft Azure
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 available time for reading books.
- Sports I play volleyball in a society and enjoy hiking in the alps and Black Forest region.
- Politics I am Interested in both national and international politics and enjoy political discussions at the German Academic Scholarship Foundation.