Fabio Ferreira

Curriculum Vitae

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ferreirafabio

Person

Place of birth	Calw, Germany
Citizenships	German, Portuguese

Education

01/20–now **Doctoral Student**, *Machine Learning Lab, University of Freiburg*.
Thesis Title: Towards Learning Algorithms that Generate Effective Learning Data and Environments, Supervisor: Prof. Dr. Frank Hutter

10/16–10/19 **M. Sc. in Computer Science**, *Karlsruhe Institute of Technology*, *GPA: 3.8/4.0 (top 15%), Foci: Machine Learning, 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*, *GPA: 3.8/4.0, with distinction (top 5%), Foci: Software Engineering, 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*, *GPA: 3.9/4.0 (graduated best in class)*.
Electrical Engineering, Computer Science

2006-2009 **IT systems engineer**, *Apprenticeship, Deutsche Telekom AG*.
Foci: 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-Wuerrtemberg Cooperative State University (DHBW Karlsruhe)*, Karlsruhe.
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.
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 chalearn 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] 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*.

[5] **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*.

[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 *IEEE-RAS International Conference on Humanoid Robots (Humanoids) 2019*.

Workshops

[8] D. Wagner, **F. Ferreira**, D. Stoll, R. T. Schirrmeister, 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*.

[9] **F. Ferreira**, L. Shao, T. Asfour, and J. Bohg. Learning Visual Dynamics Models of Rigid Objects using Rrelational Inductive Biases. In *Neural Information Processing Systems (NeurIPS) Graph Representation Learning Workshop 2019*.

Technical Reports & Pre-prints

[10] J. Rothfuss, **F. Ferreira**, S. Boehm, S. Walther, M. Ulrich, T. Asfour, and A. Krause. Noise Regularization for Conditional Density Estimation.

[11] **F. Ferreira***, J. Rothfuss*, S. Walther, and M. Ulrich. Conditional Density Estimation with Neural Networks: Best Practices and Benchmarks. 2019.

[12] **F. Ferreira***, J. Rothfuss*, E. E. Aksoy, Y. Zhou, and T. Asfour. Introducing the Simulated Flying Shapes and Simulated Planar Manipulator Datasets. 2018.

Theses

[13] **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.

[14] **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 (Studienstiftung des deutschen Volkes)**, *suggested by the university to this highly selective scholarship program (best 1% of students are admitted).*

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

Professional Service

Workshop Chairing

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

Reviewing

2019-2022 **Invited Reviewer**.
NeurIPS (2020-2022), AAAI (2021), ICLR (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

2010–2010 **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, TensorFlow, numpy, pandas, sklearn, AWS, Microsoft Azure, 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 available time for reading books and listening to audio books.
Sports	I play Volleyball and Tennis 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 and debates at the Alumni German Academic Scholarship Foundation.