MARCEL FISCHER

mafi2.github.io marcel.fischer@stud.uni-heidelberg.de My LinkedIn Profile

EDUCATION

Oct. 2021 - Apr. 2023 **Master of Science – Computational Physics**, Heidelberg University
with focus on applied machine learning and computer science
Master thesis: *"Tackling Challenges and Enhancing Disease Diagnosis in Medical Imaging with Deep Metric Learning"* in cooperation with LMU Munich supervised by Prof. Dr. Björn Ommer.
Final grade: 1.3 (* grade scale explanations see below)

Oct. 2017 - Sep. 2021 **Bachelor of Science – Physics**, Heidelberg University
Semester abroad: Portland State University (Sep. 2019 - Apr. 2020, US)
Bachelor thesis: *"Conditional Similarity Learning for Multilabel Classification of Medical Images"* supervised by Prof. Dr. Björn Ommer.
Final grade: 1.8

Sep. 2009 - Jul. 2017 Wilhelmi-Gymnasium Sinsheim (High school)
Final grade: 1.3

WORKING EXPERIENCE

May 2023 - Present **Data Scientist Intern, Roche, Basel**
within the Data, Analytics, and Imaging Group, in the Digital Pathology Product Team.

- Currently undertaking a 6-month internship (May 2023 – Oct. 2023) focused on developing innovative image-based healthcare solutions.
- Utilizing deep learning and self-supervised methods to create cutting-edge solutions for medical image analysis and various downstream tasks in digital pathology (results will be published in a paper)
- Bringing knowledge in healthcare, product development, deep learning and bio-medical image analysis to the role

Sep. 2021 – May 2023 **Research assistant, Group of Prof. Dr. Ommer, Heidelberg University / LMU Munich**

- Successfully manage and execute independent projects in the field of computer vision and representation learning; utilizing Python, TensorFlow, and Jax to develop new approaches based on recent research.
- Apply supervised, unsupervised and semi-supervised methods to medical imaging datasets.
- Improved lung diseases classification performance by 11% based on ROC AUC score over baseline by using different metric learning techniques in combination.
- Publication of results in a research paper (to be submitted).

Jan. 2019 - Apr. 2023 **Teaching assistant, Physics Department, Heidelberg University**

- Prepared and performed lab experiments as a supervisor.
- Corrected lab reports and provide help as needed.
- Effectively communicated with groups of various backgrounds: physicists, chemists, medics.

Sep. 2019 - Mar. 2020 **Intramurals Sports Official, Portland State University**

- Officiated soccer and basketball games as a referee and taught young referees the law of the game.
- Organized game days together with colleagues.
- Worked as a team on and off the field.

*) German scale of grades: 1.0 very good, 2.0 good, 3.0 satisfactory, 4.0 sufficient (lowest passing grade)

PROJECTS (3+ YEARS OF EXPERIENCE IN MACHINE LEARNING)

Additional details can be found on mafi2.github.io

Main interests: data science (imaging, biology, physics), machine learning, 2D and 3D computer vision, explainable AI, NLP, deep metric and representation learning and their interdisciplinary applications especially in a bio-medical setting

Details about my master thesis, bachelor thesis, hackathon challenge, and other university projects can be found on mafi2.github.io/projects.

PAPERS

Conference-Paper on foundational models in digital pathology, 2nd author, to be submitted 2023/24
Conference-Paper on attention-based refining of embeddings, 3rd author, to be submitted 2023
Workshop-Paper on enhancing chest X-ray disease diagnosis, 1st author, to be submitted 2023

EXTRACURRICULARS

Oct. 2021	Participated at **Q-Summit Hackathon by IBM** on the topic of bias free AI winning 2nd place (see projects)
Since 2017	Member of the German Physics Society (DPG)
Since 2014	Soccer Referee
Since 2013	Member of the Big Band of Sinsheim (trumpet)

SKILLS

Programming Languages	Python, R, C++
Frameworks/Libraries	PyTorch, Lightning, TensorFlow, Jax, NumPy, OpenCV
Miscellaneous	Git, Latex
Languages	German (mother tongue), English (fluent - spent 8 months in the US), French (intermediate), Chinese (fundamentals)