Imahn Shekhzadeh

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Education

2022 – Present **Graduate Researcher & PhD Candidate in Computer Science**, University of Geneva.
Supervisor: Stéphane Marchand-Maillet.
Collaborators: Naoya Takeishi, Alexandros Kalousis.

2020 – 2022 **M.Sc. Physics**, University of Hamburg. GPA: 1.13.
Supervisor: Gregor Kasieczka.
Collaborator: Claudius Krause.

2017 – 2021 **B.Sc. Physics**, University of Hamburg. GPA: 1.49.
Supervisor: Gregor Kasieczka.

Honors and Scholarships

2017 – Present Member of the Hamburg Mathematical Society (*Mathematische Gesellschaft in Hamburg*).

2017 – 2022 Scholarship holder of the German Academic Scholarship Foundation (*Studienstiftung des deutschen Volkes*) for my B.Sc. & M.Sc. studies in Physics.
Mentor: Thomas Ludwig.

Publications

NeurIPS 2023 *Calibrating Neural Simulation-Based Inference with Differentiable Coverage Probability.* Maciej Falkiewicz, Naoya Takeishi, **Imahn Shekhzadeh**, Antoine Wehenkel, Arnaud Delaunoy, Gilles Louppe, Alexandros Kalousis.

Journal of Instrumentation 2023 *L2LFlows: generating high-fidelity 3D calorimeter images.* Sascha Diefenbacher, Engin Eren, Frank Gaede, Gregor Kasieczka, Claudius Krause, **Imahn Shekhzadeh**, David Shih.
Code: `https://gitlab.com/Imahn/l2lflows`

NeurIPS 2023 ML4Science Workshop *Advancing Generative Modelling of Calorimeter Showers on Three Frontiers.* Erik Buhmann, Sascha Diefenbacher, Engin Eren, Frank Gaede, Gregor Kasieczka, William Korcari, Anatolii Korol, Claudius Krause, Katja Krüger, Peter McKeown, **Imahn Shekhzadeh**, David Shih.

Further Projects

2022 – Present

MIGRATE (A Multidisciplinary and InteGRated Approach for geoThermal Exploration), *collaborators*: Alexandros Kalousis, Riccardo Lanari, Matteo Lupi, Konstantinos Michailos, Juan Luis Porras Loría, Domenico Montanari, Samuele Papeschi, Gurjeet Singh. In an interdisciplinary project, we are studying the automatization of the workflow of ambient noise tomography (ANT) data. This is relevant, since ANT is used for the exploration of geothermal energy, which is a resource potentially available anywhere and at any time. The current ANT workflow, however, heavily relies on simplified assumptions, and the amount of data poses a computational strain, which is where ML methods can help. We expect to publish one to two papers within the next months.

ML Lecture Project 2021

Music Genre Recognition, *supervised by*: Prof. Christina Brandt. In the Master lecture "Machine Learning", I worked with two other students on music genre recognition, i.e. the classification of a music genre from raw audio data. We used both convolutional and recurrent neural networks and preprocessed the audio files into Mel spectograms, which are visual representations of sound. Code: `https://gitlab.com/Imahn/music-genre-recognition`.

Teaching

2022 – Present

Teaching Assistant, University of Applied Sciences Western Switzerland.
Courses: *Introduction to Machine Learning* (Fall 2022 & 2023), *Statistics for Machine Learning* (Spring 2023)

2018

Light & Schools, Universität Hamburg
Teaching school classes particular physics concepts and computing applications, such as diffraction of light, app development, etc.

2013 – 2017

Margaretha-Rothe-Gymnasium, Hamburg
Tutoring of students in Mathematics, Physics and Latin.

Skills

Programming languages
Python, Git & LaTeX(proficient), `C`/`C++` & Java (basics)

Libraries
PyTorch (proficient), TensorFlow (good), Jax (basics)

Languages
German (native), English & Farsi/Dari (fluent)

Geneva, January 2024