Diego Renner

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DiegoRenner
</> C++, Python, Java
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Experience

- **ETH Zürich** — Zurich, Switzerland
  Teaching Assistant — *Sepember 2021 - February 2022*
  - Teaching Assistant for Lecture "Numerical Methods for Computer Science".

  Technologies: C++
  Theory: ODEs, PDEs and numerical algorithms to solve them

- **ETH Zürich** — Zurich, Switzerland
  Research Assistant — *September 2020 - June 2021*
  - Hired for continued development of BEM code that was implemented in Masters Thesis.

  Technologies: C++, CMake, Git
  Theory: BEM, Resonances in Transmission Scattering Problems

- **ETH Zürich** — Zurich, Switzerland
  Teaching Assistant — *September 2020 - February 2021*
  - Teaching Assistant for Lecture "Numerical Methods".

  Technologies: C++, CMake
  Theory: ODEs, PDEs and numerical algorithms to solve them.

- **CSCS Swiss National Supercomputing Center** — Lugano, Switzerland
  Internship — *May 2018 - August 2018*
  - Writing regression checks for Piz Daint, Cray XC40/XC50 production system.

  Technologies: C, MPI, MySQL, Kibana, Grafana

Education

- **ETH Zürich** — Zurich, Switzerland
  M.Sc. Maths — *September 2021 - December 2023*
  - Strengthened analytical abilities in pure maths courses and coding skills in thesis on differentiable haemodynamics solver (Python).

- **ETH Zürich** — Zurich, Switzerland
  M.Sc. Computational Science and Engineering, Specialization Physics — *September 2018 - August 2021*
  - Degree completed with a thesis on solving the transmission scattering problem using BEM (C++).

- **Universität Basel** — Basel, Switzerland
  B.Sc. Computational Mathematics — *September 2014 - Februar 2018*
  - Completed extracurricular courses on Computer Architecture, Operating Systems and Quantum Mechanics.

- **Gymnasium Bäumlihof** — Basel, Switzerland
  Matura, Specialization Biology & Chemistry — *August 2009 - July 2014*

Certificates & Extracurriculars

- **Ready, set, go! A short introduction for Student Teaching Assistants** (remote) Zurich
  Education Development and Technology, ETH Zurich *April 2020*
  - Improving didactic skills
  - Setting goals for upcoming teaching activity

- **Effective High-Performance Computing & Data Analytics with GPU** (remote) Lugano, Switzerland
  Summerschool, CSCS-USI *July 2020*
  - GPU: architecture & programming (CUDA, OpenACC)
  - JupyterLab
  - Python: Numpy, SciPy, Dask, Numba
  - ML: Rapids
  - Deep Learning: TensorFlow

- **International Consulting Network (ICON)** Shanghai, (remote) Belo Horizonte
  Student Consulting Network *March 2017 - Februar 2018*
  - Market Research & Trend Analysis
  - Consulting for CREP (Real Estate, China) & Lalubema (Private Security, Brazil)

Following sections items are clickable

Projects & Thesis

- Parallelizing the Barnes-Hut Algorithm with MPI: Parallelized implementation of N-Body solver in C++ using the MPI framework. (Course Work)
- AiiDA Lab implementation of IR spectrum calculations for carbon based nanomaterials: An AiiDa workflow implemented in the Jupyter Notebooks based AiiDa lab interface. (Semesters Thesis, Computational Science)
- Near Resonances for Scattering Transmission Problems: A BEM based C++ solver for Scattering Transmission Problems, developed to investigate scatterer-dependent near resonances. (Masters Thesis, Computational Science)
- Detecting Near Resonances in Acoustic Scattering: Continued development of root finding algorithm from the masters thesis using empirical evidence and state of the art computation of singular values. (Published Paper)
- ML based game simulation in a finance setting: Agents trained to trade or hold a stock taking into account real historical data on cash returns. Policies are learned via reinforcement learning. (Course Work)
- On differentiable simulations of haemodynamic systems: A 1D-haemodynamics solver written in Python using JAX. The differentiability of the solver aims to aid in the development of personalised medicine. (Masters Thesis, Maths)