

# Diego Renner

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 DiegoRenner

</> C++, Python, Matlab

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## EXPERIENCE

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- **ETH Zürich** Zurich, Switzerland  
*Teaching Assistant* September 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

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- **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 Bäumlhof** Basel, Switzerland  
*Matura, Specialization Biology & Chemistry* August 2009 - July 2014

- **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

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- 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)