

Paid Master's Thesis, 10-20 h/week (f/m/d) R&D Engineer/Researcher Machine Learning (entry level) (Computer Science / Physics / Maths / Engineering etc.)

Institute of Theoretical Physics and Computational Physics, Graz University of Technology In cooperation with Institute of Fundamentals and Theory of Electrical Engineering & Graz Center of Computational Engineering

We are seeking a highly motivated machine learning engineer to join our interdisciplinary team and work on a cutting-edge applied project in simulation engineering and biomedical engineering. The focus of this position will be on machine learning and coding, and it will be in close collaboration with a simulation engineer, a physicist and an electrical engineer. The project is funded by Austria Wirtschaftsservice for the development of a prototype of a digital twin of the human thorax, coupled with a machine that can automatically detect, process and classify Impedance Cardiography signals with respect to a class of cardiovascular pathologies. There is the opportunity to pursue a Master's thesis as part of the work.



Figure 1: Left: CT image in sagittal plane of human thorax. Red-inpainted area is he ascending aorta. Middle: computational model of the thorax reconstructed from CT-scan. Colorbar indicates electric field strength. Right: computational fluid dynamics simulation of hemodynamics in the aorta.

<u>Tasks:</u>

- Contribute to an interdisciplinary applied research & development project at the intersection of machine learning, computer simulations and biomedical engineering
- Coding and implementing machine learning algorithms, testing and real-world application
- Collaborate with simulations engineers, physicists, electrical engineers
- Disseminate results (e.g. contribute to scientific reports, demos and presentation at international conferences etc.)
- Optionally, write Master's thesis related to the project as part of the position

Your profile:

- Background in computer science, physics, maths, engineering or similar (Bachelor's degree)
- Passionate about machine learning and artificial intelligence, with a focus on data analysis and modelling, and its interdisciplinary applications (simulation engineering, biomedical engineering, electrical engineering)
- Solid programming skills: Python or similar preferred
- Excellent analytical, problem-solving and communication skills, ability to learn quickly
- Ability to work independently and collaboratively in team environment

What we offer:

- The opportunity to complete a Master's thesis on the subject of the work
- Extensive, cooperative training and mentoring on an individual basis at eye level
- Collegial atmosphere
- R&D experience in a young, auspicious and interdisciplinary field
- Flexible working hours, options for home office / tele-working
- The minimum salary is 1190,10 €/month gross for a 20 h/week employment

Start date and duration: June/July 2023 (plus/minus)

This is a temporary position of up to 10-20/week for up to 12 months. Weekly work hours, start date and contract duration are flexible and subject to negotiation (e.g. increased work hours during lecture-free times, decreased work hours during final exam period etc.)

This is a unique opportunity to work on an interdisciplinary project that has the potential to make a significant impact in the field of biomedical engineering, while also pursuing a Master's thesis related to the work. If you are passionate about machine learning and interdisciplinary applications and looking for an exciting entry-level opportunity, please apply with your CV and possibly cover letter, emphasizing your research/coding experience and interests. Recommendation letters will be considered.

Applications will be considered on a rolling basis until position is filled starting from May 2nd 2023.

Please send applications and/or inquiries for further information using the subject header [Application AWS ML - YOUR FAMILY NAME] to both Dr. Sascha Ranftl (<u>ranftl@tugraz.at</u>) and Dr. Vahid Badeli (<u>vahid.badeli@tugraz.at</u>)

Contact: Dr. Sascha Ranftl Institute of Theoretical Physics & Computational Physics, TU Graz Petersgasse 16/II, A-8010-Graz

Dr. Vahid Badeli Institute of Fundamentals & Theory of Electrical Engineering, TU Graz Inffeldgasse 18/1, A-8010-Graz

Offices: Graz Center of Computational Engineering Münzgrabenstraße 36/II, A-8010 Graz