MONDAIC
Full Waveform Solutions

Mondaic AG
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R&D Engineer in Ultrasound Computed Tomography for Reinforced Concrete

100% (part-time is possible), Munich (hybrid), fixed term until 31.12.2027

Job description

We are looking for a new team member for a project on ultrasonic inspection of infrastructure made from reinforced concrete. The project aims to transfer and extend geophysical imaging methods to nondestructive material testing with ultrasound computed tomography. The objective is to reliably detect and localize pipes in thick concrete using ultrasound and full waveform inversion. The project is part of a research consortium under the umbrella of the German *Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH.*

Your responsibilities

- Expanding imaging methods for ultrasound tomography
- Developing workflows for automated data processing and analysis
- Designing interfaces for data fusion between simulation and measurement, as well as integration with sensor technology and cloud computing
- Analyzing test data and improving evaluation methods
- Collaborating closely with partner organizations within the research project

Applications will be accepted until the position has been filled.

Who we are looking for

Qualifications / Requirements

- Master's degree (MSc) in Geophysics, Civil Engineering, Computer Science, Mathematics, or a related field.
- At least 3 years of programming experience in Python, ideally with a focus on scientific computing and numerical methods.
- Ambition, initiative, and enthusiasm for working in a creative environment.
- Excitement about the unique opportunities and challenges that come with working in a startup.
- Excellent verbal and written communication skills in both German and English.

Even better if …

- You have earned a PhD in Geophysics, Earth Sciences, Computational Engineering, Applied Mathematics, or other related fields.
- You have experience with numerical modeling, full-waveform inversion, or high-performance computing.

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Who we are

Mondaic is a startup company, which was founded in 2018 as spin-off from ETH Zurich.

Our motto is *seeing through sound*. We develop new solutions for ultrasonic inspections and monitoring of civil infrastructure such as bridges or wind turbines. To this end, we transform technology and methods from seismology which have been designed originally to study earthquakes and the seismic waves the excite.

Our innovative software creates 3-D models of structures and quantifies the elastic material properties. This enables asset owners to detect flaws, defects, and fatigue reliably and non-destructively.

Unlike conventional ultrasound, we rely on digital twins and numerical simulations of ultrasound waves. By comparing these simulations with measurement data, we can iteratively improve the digital twin. This method is already well-established in seismology, but until now, it has been too costly to apply to ultrasound. Thanks to our innovative algorithms and cloud computing, we make it possible now.

Driven by a passion for technology, teamwork, and creativity, we develop groundbreaking solutions for non-invasive imaging using mechanical waves. We value diversity, promote equal opportunities, and strive to create a vibrant work environment based on mutual respect and trust. We believe in flexibility and self-determination.

For more information on who we are and what we do, check out https://www.mondaic.com

Excited? So are we. Please get in touch!

We look forward to receiving your application with the following documents:

- Your CV
- Letter of motivation
- Examples of projects you have been working on (e.g. GitHub/GitLab or publications)
- Two references

Questions regarding the position and the application should be directed to

Christian Boehm (careers@mondaic.com).