



RECENDT is a non-university, application-oriented research institution in the Upper Austrian Innovation Network and stands for the research and development of non-contact optical high-tech solutions in the fields of material characterization, non-destructive material testing and biomedical applications. In interdisciplinary teams, we have been developing the latest device technologies for industry and research for over ten years - together with scientific partners and companies.

To strengthen our team with commitment, we are looking for a

**Master student (m/f/d)**  
**Department of Physics/Mechatronics - Reconstruction of laser-ultrasonic signals on uneven surfaces**

Place of work Linz/ employment 30h/week

LUS (laser ultrasound) is a non-contact, fast, laser-based method that can be used to detect defects (e.g. pores, cracks) in materials or to characterize materials elastically. The so-called time-based SAFT (Synthetic Aperture Focussing Technique) algorithm is often used to reconstruct defects from the signals obtained for flat surfaces.

In the context of this master thesis, the SAFT algorithm is to be extended to complicated surfaces (e.g. curved component, weld seam, rough surface). For this purpose, the surface is first measured using a laser profile scanner and LUS. The laser ultrasound signals will then be processed using the new SAFT algorithm and the results visualized.

Simulations carried out in advance (e.g. k-wave, OnScale) should prove the applicability of the new algorithm. Finally, measurements on real components are to show the potential of the method in a comparison of a) non-reconstructed data, b) SAFT reconstruction and c) extended SAFT. A video of a laser ultrasound application can be found in the QR code.

**Your tasks:**

- Familiarization with reconstruction methods of acoustic waves
- Extension of the SAFT algorithm
- Carrying out simulations
- Independent execution of measurements
- Evaluation and visualization of the results
- documentation



### Your profile:

- Technical studies at a university or university of applied sciences (specializing in physics, mechatronics or equivalent fields of study)
- Experience in the fields of optics, measurement technology and data analysis
- Programming skills (Matlab, Python, LabView etc.)

### We offer:

- Collaboration in a research institution with a high national and international reputation
- Varied and independent work at the interface between science and business
- Working on exciting technical issues
- Pleasant, informal working atmosphere in a university environment on the JKU campus
- Gross monthly salary of EUR 1,000 based on 30 hours per week

### Further benefits:



Flexible working time



Fruit basket



Telework



Training and education opportunities



Organic cafeteria



Employee events



Free coffee and beverages



Weekly running group



Cheap parking spaces and jobticket

You can find out everything else from your contact person Dr. Norbert Huber on +43 732 2468 4660 or by e-mail: [norbert.huber@recendt.at](mailto:norbert.huber@recendt.at).



**Would you like to take on this challenging, exciting and responsible role and are you interested in advancing your career? Then we look forward to receiving your application:**

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