



Large Engines
Competence Center

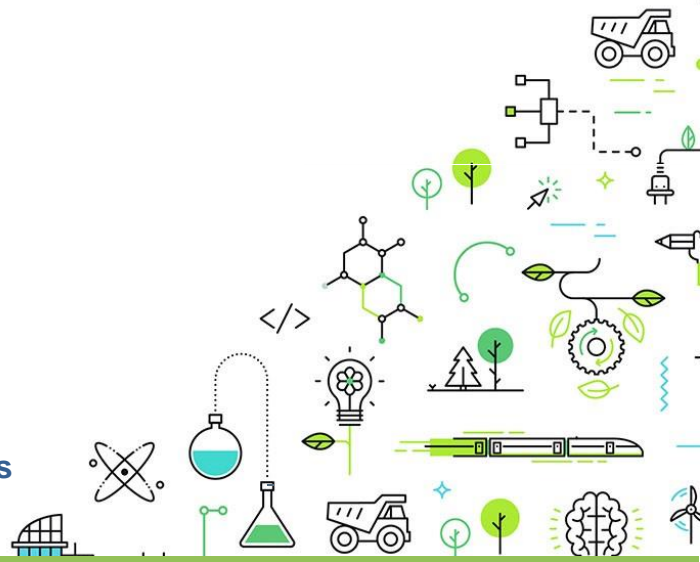
Become part of our team!

We search for a

PhD Student (m/f/d)

Research focus:

**Condition Monitoring of Key Power Unit Components
Using Acoustic Emissions and Machine Learning**



Task description

The operational safety, efficiency and emissions of large internal combustion engines (ICE) in power generation and transportation applications depend greatly on the reliable operation of key power unit components such as hydrodynamic sliding bearings. To avoid out-of-spec function, catastrophic failure or unforeseen engine downtime, it is therefore vital to continuously assess the condition of components or the entire engine. Acoustic emission (AE) analyses have been demonstrated to yield valuable insights in a non-invasive manner. However, these analyses present a significant challenge. For the research area "Simulation-based Development", we are therefore seeking a motivated and innovative PhD student to develop data-driven strategies for condition monitoring of key power unit components in large ICEs using AE analyses, in particular by employing advanced methods from the field of artificial intelligence (AI) and its subfield machine learning (ML).

Responsibility

- Get familiar with large ICE condition monitoring processes
- Develop in-depth knowledge of acoustic emission analysis and related AI/ML techniques
- Gain practical knowledge of how to obtain acoustic emission or similar data experimental investigations or engine tests
- Support in generating a comprehensive database
- Identify and evaluate data-driven approaches which serve to establish condition monitoring applications
- Analyze the data obtained and realize data-driven approaches for condition monitoring of key power unit components
- Interact closely within the LEC's research team and with key persons from industry project partners
- Communicate the project results in regular internal meetings and to project partners
- Disseminate the project results in the form of scientific publications and elaborate a doctoral thesis

The LEC supports equal opportunities and diversity.

We are looking for dedicated and motivated individuals with research talent.

Your profile

- Qualified degree (MSc) in mechanical engineering, electrical engineering, physics or similar
- Good analytical skills combined with problem-solving orientation
- Interest in AI and in particular in ML techniques
- Experience in data analysis using Python, R or similar
- Interpersonal skills with initiative and perseverance
- Collaborative work in a multidisciplinary team
- Not afraid of technical writing
- Fluent in English, German is a plus

Our offer

- Possibility to elaborate a PhD thesis within an exciting research project
- Availability of outstanding research infrastructure at the Graz University of Technology campus
- Excellent possibilities for further personal and professional development
- Full-time position with a monthly gross salary of € 3,578.80 (14x p.a.)
- Option to work part-time from home
- Earliest starting date: October 1st, 2024



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Become part of our
LEC team!

We look forward to
receiving your
application.

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