JOHANNES KEPLER
UNIVERSITÄT LINZ

TENURE-TRACK FOR

HUMAN-AI INTERACTION AND NATURAL LANGUAGE PROCESSING

INFORMATION FOR APPLICANTS

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Index

1. General 3
2. Research 3
3. Teaching 3
4. Infrastructure 4
5. Additional Requirements 4
6. Tenure (Qualification) Agreement 4

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1. General

The Johannes Kepler University Linz (JKU Linz, http://www.jku.at) is a young European university with an expert and accomplished focus on the academic areas of social and economic sciences, law, natural sciences and engineering. The studies of Human Medicine were added in 2014. During its fifty year history, the university has achieved a national and international standing with its manifold achievements in research and teaching. The JKU is a campus-style university located north of the city of Linz. The unique campus environment provides close proximity between all disciplines. Interdisciplinary collaboration, innovative base-knowledge research, and close ties to local businesses and the business community have helped to establish its principal direction. By upholding principles of unity in research and teaching as well as fostering advanced methods of knowledge transfer, the JKU Linz generates and provides services for the greater good of society, the business community, fine arts and culture. Core target groups include students, the scientific community as well as organizations representing private and public life.

The JKU was the first university in Austria to introduce studies in Computer Science back in 1969. In the meantime, over 1,000 students currently study Computer Science. The Bachelor's and Master's degree programs in Computer Science are internationally comparable; correlative program ranking reviews in this academic area have yielded strong, admirable results. In the area of research, computer scientists from Linz are highly sought-after and considered high-caliber scientists and academics, many of whom are leaders in their fields (including ERC and Wittgenstein award recipients). Computer Science at the JKU is distinguished by outstanding base-knowledge research and close collaboration with industry.

2. Research

Artificial Intelligence (AI) becomes ubiquitous in our life and has to potential to help us to solve the major problems of humanity and promises us a better future. Key to enable the newly evolving AI technologies is an efficient and comprehensive interaction between humans and AI. The human-AI interaction must be human-centered, since it will shape our society and the way we live in a digital world. Current research aims to establish proficient and pleasant conversations among humans and AI. Natural language is only one facet of this human-AI interaction, while there are many other interfaces for productive and convivial human-AI collaborations. This research position is placed in this area of human-AI interaction including human

behavior, gestures and poses, facial expressions, and micro-expressions, and natural language.

The successful candidate has a strong expertise in **human-AI interactions** and **natural language processing with a focus on machine learning based approaches**. The candidate will design, develop and investigate methods and applications of human-AI interactions enabled by machine learning methods.

The candidate should have an excellent scientific track record in areas such as statistical natural language processing, human gesture or pose interpretation, deep learning, reinforcement learning, and probabilistic reasoning. Topics of the candidate's research may include:

- natural language processing,
- text summarization,
- sentiment analysis,
- chatbots,
- dialog and speech-controlled systems,
- lip-reading,
- gesture classification and interpretation,
- facial expression and pose estimation,
- prediction of human intentions,
- learning from human feedback and demonstration,
- imitation learning,
- adversarial attacks,
- learning human concepts,
- explainable machine learning,
- trustworthy machine learning,
- generative adversarial networks (GANs),
- supporting human design and augmenting human creativity.

Furthermore, the candidate should be familiar with methods to process large quantities of data and machine learning methods. The candidate should be open to collaborations in interdisciplinary fields with other top researchers.

3. Teaching

The successful candidate should have teaching experience at Bachelor, Master or Doctoral level. The position includes teaching obligations in the study programs computer science, data science and, in particular, in artificial intelligence equivalent to four teaching hours per week (increased to eight hours per week after positive evaluation of the qualification agreement). The vast majority of courses at the Computer Science Department are taught in English, therefore the candidate should be experienced in teaching in English. The candidate should have experience in (co-)supervising academic theses.

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4. Infrastructure

For HPC tasks the MACH2 cluster (SGI Ultraviolet 3000 Shared Memory / 20 738 cores / 20 TB memory) is available.
For AI-related computing a GPU cluster and according storage is available.

5. Additional Requirements

The successful candidate should have the following additional qualifications:

- Excellent command of spoken and written English
- Great interest in collaborations within the university as well as outstanding team-working abilities in order to cooperate with national and international research institutes
- High social competence

6. Tenure (Qualification) Agreement

Tenure decisions will be based on an agreement between the candidate and the Rectorate. Annual evaluations will include a review of excellence in research and teaching, international experiences, and the acquisition of external funding (according to § 99 Sec 5 and 6 of the Austrian University Act). Promotion to Full Professorship is possible in a simplified procedure (following § 99, Sec 4, Austrian University Act).

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