

*INFORMATION FOR APPLICANTS*

**PROFESSORSHIP  
COMPUTATIONAL  
MEDICINE**



# CONTENT

- 3 EXECUTIVE SUMMARY
- 4 GRAZ UNIVERSITY OF TECHNOLOGY – UNIQUE RESEARCH ENVIRONMENT
- 6 PROFESSORSHIP COMPUTATIONAL MEDICINE
- 7 GRAZ: VIBRANT RESEARCH LANDSCAPE
- 8 CURRENT BME EXPERTISE AT TU GRAZ
- 10 WHAT LIFE IN GRAZ WILL BE LIKE
- 14 REQUIREMENTS AND APPLICATION
- 16 CONTACT





## EXECUTIVE SUMMARY

The Faculty of Computer Science and Biomedical Engineering at Graz University of Technology invites applicants for the position of a **University Professor of Computational Medicine**.

The Faculty of Computer Science and Biomedical Engineering at Graz University of Technology is committed to excellence in research and teaching. The faculty's research activities cover a broad spectrum of topics that are reflected in its main research areas **Biomedical Engineering, Safety and Security, Intelligent Systems, and Visual Computing**. We are proud of our outstanding applied and fundamental research expertise and promote interdisciplinary projects. Moreover, our faculty fosters a close dialogue with industry and encourages the establishment of spin-offs.

We are looking for a person with an **excellent scientific track record** to represent the field of Computational Medicine in research and in teaching and complements the existing research focus of the Faculty. The new professor should teach Computational Medicine in the Bachelor's, Master's and PhD programs in Biomedical Engineering and Computer Science and should be an engaged mentor for our students. The applicant should have a research focus in theoretical and computer-based methods to identify, analyze, and compare the mechanisms, diagnoses, and treatment of human illnesses. This includes the development of computer-aided models in any area of medicine including molecular biology, oncology, morphology, and pathology, with the aim of improved patient care. Cooperation with the newly created professorship for Bioinformatics, within the faculty and in the field of BioTechMed is expected.

# GRAZ UNIVERSITY OF TECHNOLOGY

In world-wide competition with comparable institutions, Graz University of Technology pursues top teaching and research in the fields of the engineering sciences and the technical natural sciences. Knowing about the needs of society and the economy is an integral part of putting together excellent education and training programs. Ultimately, the quality of the education and training at Graz University of Technology is carried by the strength of its knowledge-oriented and applied research.


## FACULTY OF COMPUTER SCIENCE & BIOMEDICAL ENGINEERING



Biomedical engineering is an **internationally visible research area** with a long tradition at Graz University of Technology. It has established a complete bachelor's and master's curriculum as well as a doctoral school. For interdisciplinary research, the Faculty is also embedded in the **inter-university cooperation "BioTechMed Graz"** with the University of Graz and the Medical University of Graz. This interdisciplinary network opens up the field for many current research topics and enables access to the latest technologies, methods and data at the location beyond the TU's resources.

As an innovation engine, the Faculty significantly contributes to the economy and has tremendous growth potential, with **30 start-ups with more than 1000 employees** to attest to that. The services of the Department have a great impact on TU Graz: its top position in international research and teaching, its visibility and effect on the society, its internationalizing PhD and Master studies, its inter-university cooperation and its industrial networking. The new professorship will be anchored in the Department of Computer Science and Biomedical Engineering and will strengthen the competence field „Biomedical Engineering“.



A blue-tinted background image showing several hands shaking in a group, symbolizing collaboration and agreement.

**“ THIS PROFESSORSHIP IS AN  
ESSENTIAL ELEMENT OF THE  
SCIENTIFIC AND STRATEGIC  
ORIENTATION OF TU GRAZ. ”**

HARALD KAINZ  
RECTOR GRAZ UNIVERSITY OF TECHNOLOGY

# PROFESSORSHIP COMPUTATIONAL MEDICINE



The new professor of Computational Medicine will be employed on a full-time permanent position according to section 98 of the Austrian Universities Act (§ 98 UG).

We are looking for a person with an excellent scientific track record to represent the field of Computational Medicine in research and in teaching and complements the existing research focus of the Faculty. The new professor should teach Computational Medicine in the bachelor's, Master's and PhD programs in Biomedical Engineering and Computer Science and should be an engaged mentor for our students. The applicant should have a research focus in theoretical and computer-based methods to identify, analyze, and compare the mechanisms, diagnoses, and treatment of human illnesses. This includes the development of computer-aided models in any area of medicine including molecular biology, oncology, morphology, and pathology, with the aim of improved patient care.

Cooperation with the newly created professorship for Bioinformatics, within the faculty and in the field of **BioTechMed** is expected.



# VIBRANT RESEARCH LANDSCAPE GRAZ



BioTechMed-Graz is a cooperation and networking initiative of the University of Graz, the Medical University of Graz, and Graz University of Technology at the interface of basic **biomedical** research, **technological** developments and **medical** applications with the aim of conducting joint research relating to health issues.

With the BioTechMed-Graz cooperation project which is geared towards sustainability and permanence, the three partner universities' target is to enhance and bundle existing competences in four large mutual research areas Molecular Biomedicine, Neurosciences, Pharmaceutical and Medical Technology, Biotechnology as well as Quantitative Biomedicine and Modeling, by creating a common cooperative platform, thus making them more visible and identifiable for science, industry and politics.

BioTechMed-Graz sees itself as a major focal point on the intersection of these disciplines and pursues a cooperation model with a unique feature on the growing Austrian health market. Its aim is to create an internationally perceivable cluster in this future market.

# CURRENT BIOMEDICAL ENGINEERING EXPERTISE AT TU GRAZ

## INSTITUTE OF NEURAL ENGINEERING



GERNOT MÜLLER-PUTZ



SELINA WRIESSNEGGER

The Lab is one of the leading labs in brain-computer communication. We are an internationally renowned research institution with a research focus on brain-computer communication and dynamics of brain oscillations. More specifically, we have extensive expertise in EEG recording, offline and online processing of brain signals and biosignals in general, feature extraction, detection and classification of brain patterns, and neurofeedback systems.

[ine.tugraz.at](http://ine.tugraz.at)

## INSTITUTE OF MEDICAL ENGINEERING



RUDOLF STOLLBERGER



HERMANN SCHARFETTER

The research field of the Institute of Medical Engineering is medical imaging with a focus on in-vivo nuclear magnetic resonance. Activities focus on the development of new methods and technologies for faster imaging, for the quantification of biomarkers and for the representation of molecular processes. To achieve these goals, MR technologies are integrated with state-of-the-art mathematical and information technology methods and new biophysical models for signal description and quantification are developed. In a separate research group, a completely new class of contrast agents for molecular MR imaging is being developed.

[imt.tugraz.at](http://imt.tugraz.at)



## INSTITUTE OF HEALTH CARE ENGINEERING



CHRISTIAN BAUMGARTNER



THERESA RIENMÜLLER



JÖRG SCHRÖTTNER

The Institute for Health Care Engineering is engaged in the development, evaluation and validation of new point-of-care and sensor technologies as well as the analysis, modelling and simulation of biophysical and biomedical processes with the aim to establish new technical approaches to support diagnosis and therapy. Methodical, instrumental, operational, organizational, quality assurance and economic aspects of health care complement the teaching and research spectrum at the institute.

[hce.tugraz.at](http://hce.tugraz.at)

## INSTITUTE OF BIOMECHANICS



GERHARD A. HOLZAPFEL



GERHARD SOMMER

We are dealing with experimental and computational biomechanics and mechanobiology with an emphasis on soft biological tissues, the cardiovascular system including blood vessels and the heart in health and disease, therapeutic interventions such as balloon angioplasty and stent implantation, polarized light and second-harmonic imaging microscopy as well as medical image processing. We are focusing on continuum mechanics, material (multi-scale) modeling of tissues and related computer simulations. We also focus on the modeling of cross-linked actin networks, then on the cross-linking of collagen fibers, and analyze growth and remodeling mechanisms of soft biological tissues. The Institute of Biomechanics was founded in 2007 and has a newly equipped laboratory with the necessary infrastructure for proper storage, preparation, and testing of human tissues. It owns state-of-the-art tissue testing devices and modern stereo light and fluorescence microscopes.

[biomech.tugraz.at](http://biomech.tugraz.at)



# WHAT LIFE IN GRAZ WILL BE LIKE

CULTURAL AND UNIVERSITY TOWN IN THE  
STYRIAN TUSCANY. WITH PLENTY OF SUN!

## CITY OF KNOWLEDGE

GRAZ HAS BEEN A UNIVERSITY TOWN SINCE 1585

Know-how from Graz goes international. Six universities with more than 16 faculties form the basis of the excellent international reputation of Graz as a research and academical location. With nearly 60.000 students of 290.000 inhabitants, Graz more than deserves the title “student town”.

## CULTURAL CAPITAL

CITY OF CONTRASTS

Graz, the exciting city of culture, and particularly its historic city centre, offers the ideal location to stage seminars, trade fairs or conferences. It is not by chance that Graz is a UNESCO World Cultural Heritage site. The historic city centre around Schlossberg hill has been growing for centuries and became a township well worthy of admiration. Since the Middle Ages, the unique and well preserved architectural styles spanning from Gothic, Baroque, Renaissance, Art Nouveau and, of course, the modern, have not only seen an increase in value but are also indicative of a sense of tradition and art. In fact, contemporary art and architecture enrich the cultural scene as much as classical culture: the Graz Opera House, theatres and festivals of classical music. In 2003, Graz was also acclaimed European Capital of Culture. “The friendly alien” art centre and the Island in the Mur still bear witness to that year of celebration.





## CAPITAL OF CULINARY DELIGHTS

### MEET WITH DELIGHT

Styria offers many local food specialties, like Styrian pumpkin seed oil, Käferbohnen beans, Grazer Krauthäuptel lettuce, and award-winning wines. The people of Graz have a unique gift for enjoying life and the Mediterranean atmosphere is palpable everywhere.

Sunny spots in cheery wine gardens, promenades in the historic city centre and narrow, atmospheric alleyways, combined with over 2,300 hours of sunshine convey a southern European flair.

## CONFERENCE VENUE GRAZ

### WHERE SCIENCE MEETS ART, CULTURE AND PASSION

Organisers of scientific conferences in particular have appreciated Graz as a conference destination for many years. Being Austria's second largest city as well as an important research and business location, Graz has, with good reason, evolved into a renowned conference venue that enjoys an excellent international reputation. Every year, approximately 45000 conference guests make use of the historic and modern congress centres. They appreciate the city's easy accessibility, as much as its sophisticated cuisine and famous Austrian hospitality. A variety of supporting programmes and day excursions, served with Styrian delicacies and regional wines, add culinary value to any event. Worth mentioning is the pleasant size of the Styrian capital. In fact, many of the excellent hotels are within walking distance of the conference centres. The rich choice of sights and cultural events is another decisive reason for choosing Graz.



**WELCOME TO GRAZ!**





**“ THIS PROFESSORSHIP  
STRENGTHENS THE EXISTING  
RESEARCH EXCELLENCE IN  
BIOMEDICAL ENGINEERING AT  
TU GRAZ AND IS ANOTHER  
IMPORTANT ASSET TO KEEP THE  
INTERNATIONAL VISIBILITY.”**

**RODERICK BLOEM  
DEAN, FACULTY OF COMPUTER SCIENCE AND  
BIOMEDICAL ENGINEERING**

**APPLY  
NOW!**





## EMPLOYMENT REQUIREMENTS

- A relevant doctoral degree (PhD),
- A relevant habilitation (venia docendi) or an equivalent qualification,
- Excellent scientific achievements (proven by outstanding publications),
- Excellent didactic and pedagogical skills,
- Management and leadership abilities,
- International experience and integration in the international research community,
- Experience with acquisition and management of research grants,
- Experience in collaborating with the industry.

Participation in teaching at Bachelor, Master and doctoral level and active participation in academic self-administration are expected. Excellent command of written and spoken English is required to represent the field internationally and to teach graduate courses. If the candidate does not speak German, we expect the willingness to learn German.

We expect the successful candidate to transfer her or his residence to the area of Graz.

## EQUAL OPPORTUNITY EMPLOYER

Graz University of Technology aims to **increase the proportion of women**, in particular in management and academic staff, and therefore qualified female applicants are explicitly encouraged to apply. Until a balanced ratio of men and women has been achieved at the university, preference will be given to women if applicants are equally qualified.

Graz University of Technology actively promotes **diversity and equal opportunities**. Applicants are not to be discriminated against in personnel selection procedures on the grounds of gender, ethnicity, religion or ideology, age, sexual orientation (Anti-discrimination). People with disabilities who have the relevant qualifications are expressly invited to apply.



## HOW TO APPLY

Interested applicants are requested to send a detailed application in English language including

- a resume including a description of research and teaching experience (also mentioning theses supervised),
- a teaching statement and a research statement,
- a list of publications including copies of the five most important publications,
- copies of certificates and diplomas and
- the application form available via [bit.ly/compmed\\_form](https://bit.ly/compmed_form)

at the latest by

**26 November 2019**

(e-mail timestamp)

per email to the Dean of the Faculty of Computer Science and Biomedical Engineering at Graz University of Technology, **Roderick Bloem** ([applications.csbme@tugraz.at](mailto:applications.csbme@tugraz.at)).

The hearings for the professorship will take place in the period of **27 January 2020 to 14 February 2020**. Candidates should be available for interviews in this period.

For further questions, please contact **Gernot Müller-Putz** ([gernot.mueller@tugraz.at](mailto:gernot.mueller@tugraz.at)).



**APPLY  
NOW!**



## CONTACT

Candidates should submit their detailed application to the Dean of Computer Science and Biomedical Engineering, Prof. **Roderick Bloem** ([applications.csbme@tugraz.at](mailto:applications.csbme@tugraz.at)).

For questions please contact Prof. **Gernot Müller-Putz** ([gernot.mueller@tugraz.at](mailto:gernot.mueller@tugraz.at)).

More on [csbme.tugraz.at](http://csbme.tugraz.at).



[www.tugraz.at](http://www.tugraz.at)