

Fully funded PhD-Research Position on mechatronic view and modelling of buzz pollination by bees

A fully funded research position (full-time, 40 hours/week) at the PhD-student level is offered in the group for Advanced Mechatronic Systems at the Automation and Control Institute (ACIN) of the Vienna University of Technology. The starting date is planned as soon as possible, depending on the availability and preference of the successful candidate.

Project goal: This project aims to combine approaches from pollination biology and flower evolution (University of Vienna) with methods from mechatronics (ACIN) to investigate how Melastomataceae flowers have adapted to buzz-pollinating bees. In order to investigate the mechanical properties of crucial flower components, experiments with novel vibration and gripping mechanisms are performed, targeted to closely resembling a buzzing bee. Furthermore, the flower structure is investigated using μ -computed tomography and used to create 3D models of the structures. Finite element analysis is utilized to employ numerical simulations for the evaluation of the biomechanical properties and pollination release of these flowers. Since buzz-pollination occurs in approximately 10% of flowering plants, including important crops, we expect the project results to be highly relevant for fundamental research as well as to have important impact for applications in agronomy.

Requirements: We are looking for candidates holding an MSc degree in Electrical Engineering, Mechanical Engineering, (Applied) Physics, or equivalent, preferably with a strong background in at least one area of mechatronics, scientific instrumentation, precision engineering, measurement systems, system engineering, or modeling and control engineering. Good fundamentals, excellent grades, and interest in mathematics and physics are prerequisites. Motivation to pursue novel research in close collaboration with well-reputed international industry partners and research universities is essential. Thus, good communicational skills, fluency in English or German, and a goal-oriented work attitude as member of a dynamic international research team are expected.

Conditions of employment: The appointment will be for a period of up to four years. As an employee of the TU Vienna you will receive a competitive salary as well as an excellent secondary benefits package, including a flexible work week, health insurance, social security, and additional company retirement benefits. Salary and benefits are in accordance with the Collective Labor Agreement for Austrian universities. The annual gross salary of a research assistant (PhD student) in the first year starts at € 45.882, and grows to € 54.393 in the 4th year of the appointment. We offer the opportunity to perform scientifically challenging research in a multi-disciplinary research environment, with a group of international researchers and strong collaboration with industrial, governmental, and university research laboratories. Further career growth in all teaching, research, and industrial applications is provided.

How to apply: To apply for this position, please email your application in pdf-format to csencsics@acin.tuwien.ac.at including a

- a cover letter with a statement that gives your motivation for this position
- a full CV, and your grades
- an abstract of your MSc thesis and a list of your publications (if any), and
- the names and contact information of two professional references.

The position will remain open until filled, but an early date for application is preferred and encouraged.

For more information about the ACIN department and Vienna University of Technology, please visit our websites

<https://www.acin.tuwien.ac.at/en/intelligente-mechatronische-systeme-ams/> and

<http://www.tuwien.ac.at>.