

Ilmenau

Profile of the location



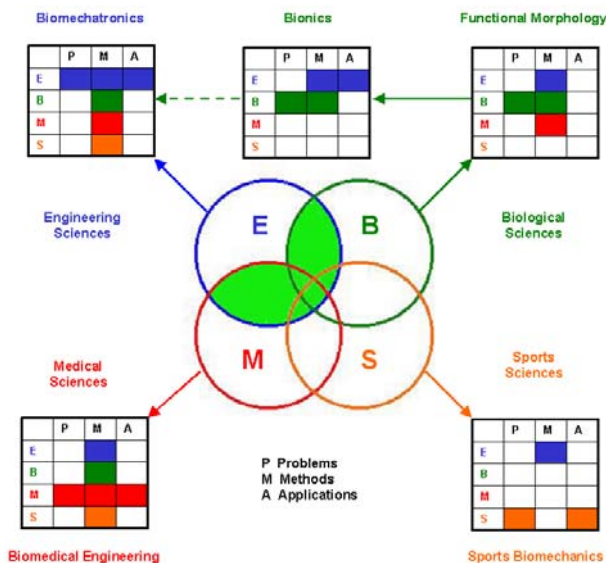
Prof. Dr. Hartmut Witte

TU Ilmenau Dept. of Biomechatronics was founded as the first Chair of biomechatronics in Germany. Currently there are three main topics in activities for *BioKoN*:

- Micro Systems Bionics
- Biomedical Engineering
- Bionically inspired Robotic

For these fields of competence, there are three scouts in the local center “BioKoN” in Ilmenau. Their tasks are investigation and classification of current results of the latest research. According to the local challenges, Ilmenau is a bionic venue for young scientists and industrial establishments of the federal state of Thuringia, Sachsonia and countries of East-Europe.

Biomechatronic at TU Ilmenau



„Biomechatronics is the development and improvement of mechatronic systems making use of biological and medical knowledge”. There are two major aspects: On the one hand particularly mechatronic products and methods have to be adapted to an application on humans or biological systems under the focus of their possibilities and demands – which means biocompatibility in a wider sense. On the other hand mechatronic design could be “biologically inspired”. This process should be based

on principles of bionically oriented methods of engineering. Conclusion – biomechatronic is not an opposite strategy to existing high technology, it complements und expands the method repertoire of engineering sciences.

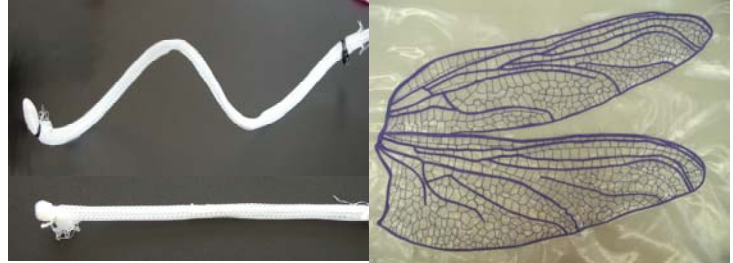
Research

Main topics in research are the analysis and design of technical locomotion systems, in which the size spectrum of biological from small to large mammals is considered. Great interest is directed towards the human being as a motor specialist as well as an object of human medicine. Its locomotion including the use of the trunk, the gripping and manipulation is studied with focus on prevention, diagnostics und

therapy as well as an example of biological inspiration for adaptive mechanisms in the field of robotics. Robotic strategies, especially of swarm leading are used for e.g. touristic assistance systems with a focus on human-machine-interfaces. At the moment one main activity is the coordination between the requirements of motoric and sensoric systems.



Monolithic manipulators could be realised with an adaptable gripping force and flexibility (ZENTNER, BÖHM)



Pressure tube as chain of textile-locked joints and these joints in an embroidery with the pattern of a dragonfly's wing (TITV Greiz)

Competences for research and consulting at TU Ilmenau

- *Bionics of micro systems*
- *Compliant mechanisms*
- *Bionics of construction and material*
- *Ecological Models / environment analytics*
- *Neuro cybernetic*
- *Medical Engineering*
- *Ergonomy*
- *Robotics*



Microfluidic devices: as life support systems for cells and motor proteins (M. Stubenrauch)

Public relation, presentations, education

We offer product related lectures in bionic for educational and advertising events of companies. Furthermore we do public educational events and presentations, expert agency and technology transfer as well as consultation for projects and expertises. The development of a database for biologists and engineers in cooperation with other BioKoN-partners is a further focus.

Contact

For further questions please feel free to contact us:

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