

## **Flexible and function driven shape representations**

Subject leader: László Horváth CSc, PhD, Dr. habil

### *About the subject*

Subject introduces into currently developing shape representations to fulfill recent new requirements against shape model. In this way, modeling behavioral functional features, complex rigid-flexible structures, and organic shapes are characterized, discussed, and exemplified.

### *Purpose and objectives*

Subject supports research which requires recent knowledge about shape centered mathematical modeling and simulation of physical system. It helps student at research in representation of flexible bodies and function driven organic shapes.

### *Issues and topics*

Recent advances in boundary representation of shapes.

Shape model in multidisciplinary contextual environment.

Physical system that includes both rigid elements and flexible structures.

Modeling flexible bodies using Modelica language.

Functional form features with behaviors.

Generation of flexible body model using principle and method of finite element analysis.

T-spline representations, their new characteristics and compatibility with NURBS.

Geometric and organic shapes.

Model of function driven organic shapes.

Shape model for additive and traditional manufacturing processes.

### *Laboratory support*

Students understand principles, methods, contextual connections and system issues discussing related issues on most advanced experimental models. These models are developed for this subject in the cloud environment of 3DEXPERIENCE system.

### *Literature*

Student collects, studies, and processes recent actual and time-honored classical publications about relevant research results considering own research plan then submit results of this work in the form of survey paper. Aim is to collect published knowledge and research results for the application at student PhD research.