

Vienna University of Technology,  
Faculty of Informatics,  
Institute of Computer Graphics and Algorithms,  
Pattern Recognition and Image Processing Group  
DiplDiss Seminar  
Summer Term 2017  
May 30<sup>th</sup> 2017

**Program:**

- 13:00-13:05 *Opening* (Walter Kropatsch, Majid Banaeyan)  
13:05-13:15 Automatic segmentation of knee cartilage in MRI using particle filters (Patrick Valdellon)  
13:15-13:25 Segmentation of frontal-view face images (Robin Melan)  
13:25-13:45 Model- and correspondence-free multi-camera calibration (Majid Banaeyan)  
13:45-13:50 *Closing* (Walter Kropatsch, Majid Banaeyan)

Detailed Program

**Automatic segmentation of knee cartilage in MRI using particle filters (Patrick Valdellon, MSc)**

The aim of my master's thesis is to automatically quantify the average intensity of knee cartilage volumes in 7 Tesla MRI. We are trying to implement an algorithm using particle filters. The particular challenges lie in the circular shape of the knee cartilage and the low contrast periphery. Inaccuracies in the segmentation of the volume have a big influence on the calculated average intensity value.

**Model- and correspondence-free multi-camera calibration (Majid Banaeyan, PhD)**

Camera calibration is the fundamental task in computer vision which can be done in two general approaches namely, model-based or model-free techniques. In the model-based methods, the camera calibration becomes a parameter estimation problem and requires a predefined parametric function to relate measurement attributes into the ground-truth quantities. Instead, we are working on a proposed model-free technique which does not assume any geometrical model and parameters for the camera calibration. We aim at employing a Pyramid Pattern Code (PPC) to combine with suitable segmentation technique to deal with any arbitrary lens distortion. The PPC provide the reliable detection procedure and release us to solve the correspondence problem.