Fachbereich Computerwissenschaften

EINLADUNG
zum Gastvortrag am

Dienstag, 10. April 2012, 9:00 Uhr, HS T02
Institutsgebäude Jakob-Haringer-Str. 2, Itzling

von
Dr. Roland Kwitt
Medical Imaging Lab, Kitware Inc., Chapel Hill, NC, USA
zum Thema:

„ Recognition in Ultrasound Videos - Where Am I ?"

Abstract

While many developed western countries have immediate access to expensive imaging modalities, such as MRI or CT, rural parts of the world or developing countries usually do not posess that kind of advanced imaging equipment. For that reason, ultrasound (US) imaging has become increasingly popular in these areas, especially with the emergence of portable probes that can be hooked-up to mobile phones or tablet PCs. Since experienced radiologists are usually unavailable as well, it has been proposed to have supporting staff perform ultrasound examinations. This can be problemantic, though, for one particular reason: Locating an organ or an area of interest is hard for unexperienced personnel, mainly due to variation in human anatomy and high noise levels in ultrasound images. In this talk, we discuss an approach to guide the localization of interesting regions by modeling appearance changes in ultrasound video sequences by a generative model and comparing that model to an atlas of previously acquired key locations. We argue that the change of appearance of a articular anatomical structure as we move the ultrasound probe is more distinctive than a single, still image of the same area. Technically, we draw on recent advances in action recognition literature and model the appearance changes as a non- linear dynamical system. Similarity among US video sequences is then defined as similarity in the parameter space of that model. We present several experiments on US sequences acquired on a handmade noodle-phantom and a 3-D abdominal phantom. We further show preliminary results on the impact of anatomical variations, simulated by (non-linear) spatial distortion of the video material.

Host: Univ.-Prof. Dr. Andreas Uhl