

informatik-Kolloquium

Der Fachbereich Informatik der Johannes Kepler Universität Linz¹ lädt in Zusammenarbeit mit der Österreichischen Gesellschaft für Informatik (ÖGI) zu folgendem Vortrag ein:

- Topic:** Learning better models for computer vision
- Presenter:** Prof. Dr. Thomas Pock, Graz University of Technology
- Date:** June 14th, 2016, 4:30 pm
- Location:** Johannes Kepler University Linz,
Computer Science Building (SP 3), Room 048

Abstract: Until recently, computational imaging, learning was seldomly used in practical applications of machine vision. Recent progress in computing power as well as new algorithmic insights makes these techniques now feasible and exploitable. According to Bayes' theorem, the posterior distribution of a certain vision problem is proportional to the product of a prior distribution and a data likelihood distribution. The classical maximum a-posterior (MAP) estimate is given by the sample that maximizes the posterior probability, or equivalently minimizes the negative logarithm of the posterior probability. This leads to the minimization of a cost function that is given by the sum of a regularization term (prior) and a data fidelity term (data likelihood). Rather than using handcrafted models for these terms, we make use of machine learning techniques to learn "better" models. In a first application we show how to learn a powerful regularization term for high-quality image reconstruction from compressed sensing MRI. Our learned algorithm allows to speed-up the MRI acquisition time by a factor 4-6. In a second application, we show how to learn the data fidelity term for a stereo algorithm. Our learned stereo algorithm yields state-of-the-art results on a variety of depth estimation benchmarks while running in real-time.

Short Bio: Thomas Pock, born 1978 in Graz, received his MSc (1998-2004) and his PhD (2005-2008) in Computer Engineering (Telematik) from Graz University of Technology. After a Post-doc position at the University of Bonn, he moved back to Graz University of Technology where he has been an Assistant Professor at the Institute for Computer Graphics and Vision. In 2013 Thomas Pock received the START price of the Austrian Science Fund (FWF) and the German Pattern recognition award of the German association for pattern recognition (DAGM) and in 2014, Thomas Pock received an starting grant from the European Research Council (ERC). Since June 2014, Thomas Pock is a Professor of Computer Science at Graz University of Technology (AIT Stiftungsprofessur "Mobile Computer Vision") and a principal scientist at the Department of Safety and Security at the

¹ Der Fachbereich (<http://informatik.jku.at>) besteht aus folgenden Instituten: Application Oriented Knowledge Processing (FAW), Bioinformatics, Computational Perception, Computer Architecture, Applied Systems Research and Statistics, Computer Graphics, Formal Models and Verification, Networks and Security, Integrated Circuits, Pervasive Computing, Software Systems Engineering, System Software, Telecooperation, Signal Processing

Austrian Institute of Technology (AIT). The focus of his research is the development of mathematical models for computer vision and image processing in mobile scenarios as well as the development of efficient algorithms to compute these models.

Einladender: Univ.-Prof. Dr. Oliver Bimber, Institute of Computer Graphics

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