



Department of Computer Science

Visual Computing Technologies for Microscopy Imaging

Marco Agus and Jens Schneider

Hamad Bin Khalifa University
Doha, Qatar

Hosted by Przemyslaw Musialski

Date: Wednesday, December 1, 2021
Seminar: 2:30 PM – 3:30 PM
Location: WebEx Link:
<https://njit.webex.com/njit/j.php?MTID=m5666548570c0321a71df097602dcc35a>

<https://cs.njit.edu/seminars>

Abstract:

The recent enormous boost of big data and artificial intelligence technologies is rapidly revolutionizing research investigations in all scientific domains, and various novel disciplines targeting the usage of integrative computational approaches in traditional fields are emerging. In this context, the analysis of high-resolution microscopy images, that is a routine task for histopathologists for medical diagnosis from human tissue biopsy samples, or for neuroscientists for ultrastructural analysis of animal brain samples, is starting to get benefits from the research efforts from two disciplines: computational histopathology and connectomics. Both exploit machine learning and visual computing technologies to support domain scientists with tools for automatic analysis and visual presentation in a way to enable accurate quantification and knowledge extraction. In this seminar, we will overview the main challenges in the field, the recent outcomes of our research efforts, the current limitations, and various avenues for future investigations.

Bio:

Dr. Marco Agus is an Assistant Professor at Hamad Bin Khalifa University (HBKU) - Qatar Foundation in Doha, Qatar. He worked as research engineer at King Abdullah University of Science and Technology (KAUST), in Jeddah, Saudi Arabia and as staff scientist at Center of Research, Development and Advanced Studies (CRS4), in Cagliari, Italy. He holds a Master Degree in Electronic Engineering from University of Cagliari, Italy and a Ph.D. in Mechanical Engineering from the same university. His research activities involve different fields in visual computing, ranging from haptic simulations and real time visualization for surgical training, to real time visualization methods and user interaction schemes for autostereoscopic displays, to real time graphics methods for interactive inspection of massive models gathered from different domains, to geometry processing and visualization of electron microscopy data for supporting neuroscience investigations. He disseminated more than 40 peer-reviewed papers in visualization and visual computing, with almost 1000 total citations according to Google Scholar at the time of writing. He regularly provides tutorials at most important visual computing venues, like ACM SIGGRAPH and Eurographics, and he acts as committee member, reviewer, chair and associate editor for top journals and conferences in the visualization field. He is co-chairing the short papers program in the 24th Eurographics Conference on Visualization EuroVis 2022.

Dr. Jens Schneider is an Assistant Professor at the College of Science and Engineering at Hamad Bin Khalifa University (HBKU) in Doha, Qatar. He holds a MS in Computer Science from RWTH Aachen, Germany and a doctorate in Computer Science from Technical University in Munich, Germany. Before joining Hamad Bin Khalifa University, he has worked at King Abdullah University of Science and Technology (KAUST), Saudi Arabia as a research scientist. He has worked in scientific visualization and visual computing for two decades, with research interests in large-scale interactive visualization, hierarchical and level-of-detail algorithms, GPU-friendly data compression as well as parallel and GPU-based algorithms. His more recent research interests also include the use of AI in visualization and computer graphics. He has published more than 40 papers, book chapters, and patents. His work has attracted over 1300 citations as of writing.