

The Field Robotics Center

Seminar Series

Monday, 21st September GHC 2109 1:30pm – 2:30pm

Food will be served



Sebastian Dingler

Visiting Master's Student
Karlsruhe Institute of Technology

Using Lidar and Monoscopic Camera for Bridge Reconstruction

Abstract : The Aerial Robotic Infrastructure Analyst (ARIA) project is developing new methods to model and analyze public infrastructure elements like bridges with micro air vehicles (MAVs). Current inspection methods involve expensive, specialized equipment, and are potentially dangerous for workers. Additionally, the inspection results are difficult to compare over time. Using an MAV coupled with a Lidar and monoscopic camera offers an approach to construct a rich 3D model of the structure, which enables inspectors to observe specific locations and to track the progress and abrasion of parts over time. In this talk, I will introduce the current work and challenges on combining a monocular camera and a Lidar sensor for reconstruction of bridges. The combination offers two main advantages for reconstruction: first, the Lidar allows to provide a global accurate estimate of the camera poses with scale. Secondly, the range measurements from the Lidar act as a prior depth for multi-view reconstruction by the camera. Subsequently, as a final step, the depth map is enhanced by a super-resolution method.

Speaker Bio : Sebastian Dingler is a visiting master's student from the Karlsruhe Institute of Technology (KIT), Germany. He is currently working with the Aerial Robotic Infrastructure Analyst (ARIA) and is advised by Sebastian Scherer. He received his Bachelor of Engineering (B.Eng.) in Computer Engineering from the University of Applied Science Esslingen, Germany in 2012.



For further information please contact: Michael Kaess, kaess@cmu.edu

www.frc.ri.cmu.edu