

BIOENGINEERING

Spring 2021 Seminar

Date: Thursday, April 22, 2021

Time: 12:00 pm - 1:00pm

Location: Virtual

Join Zoom Meeting

[https://gmu.zoom.us/j/98805494005?](https://gmu.zoom.us/j/98805494005?pwd=M1A2R1BaSEdqa2hhOUltTE5YeWxtZ09)

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Meeting ID: 988 0549 4005 Passcode: 454698



Ilkay Oksuz, Ph.D.

Biography: Dr. Ilkay Oksuz is currently an Assistant Prof. in the Computer Engineering Department of Istanbul Technical University. His current research interests are in machine learning and deep learning, with a focus on medical image quality assessment, medical image reconstruction and segmentation. He has been working as a member of the King's College London Biomedical Engineering Department under mentorship of Dr. Andrew King and Prof. Julia Schnabel since August 2017. He got his Ph.D. degree in Computer, Decision and Systems Science from IMT School for Advanced Studies Lucca, under supervision of Prof. Sotirios

Tsaftaris. In 2017, he worked as a visiting researcher in IDCOM lab of The University of Edinburgh. In 2016, he was a postgraduate fellow at Diagnostic Radiology Department of Yale University under mentorship of Prof. Xenios Papademetris.

Title: Detection and Correction of Cardiac MRI Quality Issues Using Deep Learning

Abstract: Cardiovascular disease is the major cause of mortality in the world. Recently, Cardiovascular Magnetic Resonance (CMR) techniques have gained ground in diagnosis of cardiovascular disease and good quality of such MR images is a prerequisite for the success of subsequent image analysis pipelines. Quality assessment of medical images is therefore an essential activity and for large population studies such as the UK Biobank, manual identification of artefacts such as those caused by unanticipated motion is tedious and time-consuming. In this talk, recent work on detection of wrong cardiac planning and cardiac motion artefacts using deep learning techniques will be described. The details of deep learning architectures and machine learning methodologies will be given with a certain focus on synthetic k-space corruption and curriculum learning techniques. In the last part of the talk, the mechanisms to correct image artefacts will be discussed alongside with their influence on achieving high segmentation accuracy.