

Наслов: „ Deep Learning for Affective Computing and Human Activity Recognition“

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Апстракт: Affective Computing and Human Activity Recognition are two fields where the increasing number of available sensors requires novel machine-learning techniques that are able to learn from and to combine large amounts of multimodal data. The proposed talk will focus on the two domains individually. In the Affective Computing domain, we experimented with deep learning techniques for driving distraction detection, where the data comes from many different sources, including: frontal video, thermal video, electrodermal activity, heartrate, breathing rate, PPG (Blood Volume Pulse) and Facial Activation units (AUs). More specifically, we experiment with deep data fusion techniques that are based on 1D Convolutional Neural Networks (CNNs), 2D CNNs and Long Sort-Term Memory (LSTM) Neural Networks. The CNNs offer denoising and learning additional representations directly from the raw data and the LSTMs capture temporal dynamics in the data. The experimental results showed that the deep data fusion leads to better recognition performance compared to shallow (feature-space) fusion and no-fusion (unimodal) approaches. In the Human Activity Recognition domain, using similar techniques, we developed deep multimodal data fusion method for learning from 7 smartphone sensors. This approach achieved the highest score and won the international SHL Competition held in Singapore 2018 (<http://www.shl-dataset.org/activity-recognition-challenge/>).

Биографија: Martin Gjoreski is a researcher at the Department of Intelligent Systems, Jožef Stefan Institute, in Ljubljana, Slovenia. In 2014, he obtained his bachelor degree from the Faculty of Computer Science and Engineering, Ss. Cyril and Methodius University in Skopje, Macedonia, and in 2016, he received MSc degree in Information and Communication Technologies from the Jozef Stefan International Postgraduate School in Ljubljana, Slovenia. In the same year he enrolled in PhD studies at the same school. His research focuses on development of standard and deep machine learning methods for multimodal sensor data, and their applications in fields such as affective computing, mental and physical mobile health. He was leading researcher for the team “JSI-DEEP”, which won the machine-learning challenge in human activity recognition from smartphone sensors, organized by the University of Sussex and HUAWAI as part of the international conference UbiComp 2018 in Singapore.