

Humboldt Kolleg

Hilton Garden Inn Hotel, Doamnei St. 12, Bucharest  
18-22 November 2020

### *Global Challenges of the 21<sup>st</sup> Century*

- 1) Technological development and human health/ quality of life*
- 2) Climate change and environmental sustainability*
- 3) Democracy and cohesion in Europe*

### *Convolutional Neural Networks for Medical Imaging*

Over the last few years, handcrafted models for object recognition from images have been replaced by trainable models based on deep learning, due to the impressive recognition performance of the latter models. Indeed, convolutional neural networks (CNNs) achieve state-of-the-art performance for object recognition, semantic segmentation and related computer vision tasks. Since CNNs are inspired by the hierarchical structure of the human visual cortex, these models learn patterns in a similar way to humans, thus reaching human-level accuracy rates in many cases. In this talk, I will present two applications of CNNs for medical imaging, namely 3D CT/MRI scan super-resolution and intracranial hemorrhage detection.

**Radu Tudor Ionescu** is Professor of Computer Science at the University of Bucharest, Romania. He completed his PhD at the University of Bucharest in 2013. He received the 2014 Award for Outstanding Doctoral Research in the field of Computer Science from the Romanian Ad Astra Association. His research interests include machine learning, computer vision, text mining, image processing and computational biology. He published over 80 articles at international peer-reviewed conferences and journals, and a research monograph with Springer. He received the "Caianiello Best Young Paper Award" at ICIAP 2013 for the paper entitled "Kernels for Visual Words Histograms". Radu also received the "Young Researchers in Science and Engineering" Prize organized by prof. Rada Mihalcea for young Romanian researchers in all scientific fields. Together with other co-authors, he obtained good rankings at several international competitions: 4th place in the Facial Expression Recognition Challenge of WREPL 2013, 3rd place in the NLI Shared Task of BEA-8 2013, 2nd place in the ADI Shared Task of VarDial 2016, 1st place in the ADI Shared Task of VarDial 2017, 1st place in the NLI Shared Task of BEA-12 2017, 1st place in the ADI Shared Task of VarDial 2018. He became a Romanian Young Academy (RYA) member in 2020.