

10th International Workshop on
DATA ANALYSIS METHODS FOR SOFTWARE SYSTEMS



Plenary Session
“Business and Science Together”
Friday, November 30

14⁰⁰–16⁰⁰

Jonas Kubilius “Deep Learning for Understanding Human Vision” (KU Leuven, Belgium; Massachusetts Institute of Technology, USA)

Rytis Bieliauskas “Cryptocurrency Technologies (Blockchain)” (CoinGate, JSC “Virtualios valiutos”)

Šarūnas Šuipis “Western Union: *Moving Money for Better* with Robotic Process Automation (RPA)” (Western Union Processing Lithuania)

Ieva Jonaitytė “Computer vision problems with CNN (Convolutional neural networks)” (UAB „Neurotechnology“)

Cryptocurrency Technologies (Blockchain)

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Cryptocurrencies are based on a new revolutionary technology called Blockchain. As defined by the Oxford dictionary, Blockchain is "a system in which a record of transactions made in Bitcoin or another cryptocurrency are maintained across several computers that are linked in a peer-to-peer network."

Blockchain is different from traditional computer systems as its security model is not based on hierarchy and limiting access to information or permissions, but on cryptography and mathematical calculations. It allows creating an open-source decentralized platform / protocol like Bitcoin, which is borderless, decentralized, transparent, censorship-resistant, and permissionless. Just like the open Internet enabled not only permissionless access, but also permissionless innovation in Information Technologies, Bitcoin enables permissionless access and innovation in Financial Technologies.

Computer vision problems with CNN (Convolutional neural networks)

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As a company having 28 years of experience of RnD in biometrics, computer vision and AI we are happy to share our knowledge, examples of problems that we meet and solve in this area. We will present a new approach of developing algorithms without coding, SentiSight.ai platform. This environment for image preprocessing and algorithm training is aimed to enable non-coders to investigate deep learning possibilities for their custom topics and problems. Later on some basics of the used technology will be explained. This will include Convolutional Neural Network algorithm and its usage for a few types of most common tasks: image classification, object detection and image segmentation (finding exact contours of certain areas in the image).

Deep Learning for Understanding Human Vision

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How do we recognize what we see? Despite the deceptive ease of perceiving things, explaining how we see turns out to be a supremely difficult task. Only recently advances in computer vision finally brought a class of models, known as deep neural nets, that are capable of matching human and non-human primate performance in several visual perception tasks. Our present aim is to develop these artificial systems further so that they would simultaneously (i) predict primate neural and behavioral responses during visual object recognition tasks, (ii) map well onto brain anatomy, and (iii) generalize to novel stimuli similarly to primates. I will first introduce Brain-Score, our composite benchmark for an extensive comparison of deep nets to primate ventral visual stream. Building on the insights gained by performing such benchmarking, I will describe the CORnet family of models that commits to biological realities of the visual cortex. I will further extend our benchmarking to a much wider image set of images, including cartoons and paintings, to test and compare the limits of generalization in humans and machines. Taken together, our approach brings forward a good baseline deep neural network that could serve as a building block towards developing capable artificial cognitive agents.

Western Union: *Moving Money for Better* with Robotic Process Automation (RPA)

Š. Šuipis

VP, Operations & Managing Director
Western Union Processing Lithuania

- Lessons learned from the global roll out of RPA at Western Union.
- Identifying key tasks and processes to be automated through RPA.
- Developing and adjusting a global RPA roadmap.
- Linking RPA with Business Process & Human Resources Management for an integrated automation framework.