

## PAVEL LOSKOT

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Pavel Loskot joined the ZJU-UIUC Institute, Haining, China, in January 2021 as an Associate Professor after being 14 years the Senior Lecturer at Swansea University in the UK, where his research was funded by the EPSRC, NERC and other major government institutions. Dr. Loskot obtained his PhD degree in Wireless Communications from the University of Alberta in Canada, and the MSc and BSc degrees in Radioelectronics and Biomedical Electronics, respectively, from the Czech Technical University of Prague in the Czech Republic. In 1999 – 2001, he was a Research Scientist at the Centre for Wireless Communications, Oulu, Finland. In 2014/2015, he was on a sabbatical leave at CSRC, the Chinese Academy of Engineering Physics, Beijing, China. In the past nearly 30 years, he was involved in numerous collaborative research and development projects, and also held a number of consultancy contracts. He is the Senior Member of the IEEE, a Fellow of the Higher Education Academy in the UK, and the Recognized Research Supervisor of the UK Council for Graduate Education. His current research focuses on mathematical and probabilistic modeling, statistical signal processing and machine learning for multi-channel data in biomedicine, computational biology, and wireless communications. He published over 40 journal and 60 conference papers as the first or corresponding author, received 7 best paper awards, delivered nearly 20 tutorials and over 70 plenary, keynote and invited talks in conferences. He was involved in organizing over 30 conferences including IEEE and ACM, and serves as the TPC member in over 100 conferences annually. He is also an editor in *Frontiers in Genetics*, and the *ICT Express*.

Dr. Loskot received the Nokia Research Award in 2000 for defining the general transmission trade-offs in wireless communications. In 2004 – 2006, while designing low-power over-horizon radios, he showed that it is the additive noise, and not the multipath propagation that fundamentally limits the performance of wireless systems. In 2012, he proposed to modulate information as changes in the transmission configurations. He also showed that the energy efficiency can have very different meanings depending on the target stakeholders. In 2012, he filed a patent for a system that can query and summarize information from a corpus of electronic documents using a defined information scoring function. Between 2010 and 2013, he organized the university-wide seminars on exploring networks in different engineering and scientific disciplines, for which he received the EPSRC Bridging the Gaps award. In 2010-2012, he led the Welsh Government funded project about the feasibility of next generation broadband networks in Wales. The British Telecom Plc. subsequently rolled out the Superfast broadband service in Swansea area in the summer 2014. In January 2017, he submitted a contribution to the IEEE-SPS blog that the research automation will greatly affect how the research is done in near future. Since 2017, he is proposing that all future wireless systems can greatly benefit from the location-adaptive transmissions. This work and the work on the information aging in real-time wireless networks were presented as tutorials in the top-tier IEEE conferences MILCOM 2018 and 2019, respectively. In 2014-2019, he collaborated with SITA Ltd. in London, UK, to explore the feasibility of dissociating passengers and their luggage in air transport.

Since joining the ZJU-UIUC Institute, Dr. Loskot advocates that strong teaching is necessary for strong research, and that the environmental ecology can be considered for any human-related activities including research. His recent research contributions include defining higher-order statistics as the statistical sum-moments, approximating multivariate probability densities from their pairwise correlations, using signal folding for effectively de-noising stochastic signals, defining causality for univariate time-series, and discovering that dynamic systems are occasionally deterministic over short periods of time. He also postulated that all dynamic systems in the face of uncertainty must prioritize their structure over any other function including, for example, intelligence, so all emerging functions are inevitably limited by the system structure. In addition, he is of the opinion that no major research progress is nowadays possible unless we start identifying and exploiting the research patterns such as combinatorial innovations and generalizations. This would define a qualitatively new research field of meta-research.

Dr. Loskot was involved with IARIA since 2017 as the Steering Committee Member of the International Conferences on Advances in Signal, Image and Video Processing (SIGNAL). He contributed the following research papers to IARIA:

- [1] P. Loskot, "A Guide to Parameter Estimation," *Inter. Journal On Advances in Systems and Measurements*, to appear, 2025.
- [2] P. Loskot, "Analyzing Complex Models by Orthogonal Input-Output Decompositions," *Proc. Explainability, TechWorld Congress*, Valencia, Spain, 17-21 Nov. 2024. **Best paper award.**
- [3] P. Loskot, "Finite Memory Arithmetic and the Number Representations on Computing Machines," *Inter. Journal On Advances in Systems and Measurements*, vol. 16, no. 3&4, pp. 150-158, Dec. 2023.
- [4] P. Loskot, "Key Ideas in Parameter Estimation," *Proc. 9th SIGNAL*, Athens, Greece, 10-14 March 2024. **Best paper award.**
- [5] P. Loskot, "On Machine Integers and Arithmetic," *Proc. 8th SIGNAL*, Barcelona, Spain, 13-17 March 2023. **Best paper award.**
- [6] P. Loskot, "Discovering Causality in Event Time-Series," *Proc. 7th SIGNAL*, Venice, Italy, 22-26 May 2022. **Best paper award.**
- [7] P. Loskot, "High-Level Brain Functions and Structure Can Inspire Autonomous Systems with More General Intelligence," *Proc. 17th Inter. Conference on Networking and Services (ICNS)*, Valencia, Spain, 30 May - 3 June 2021.