令和２年１１月１日

九州工業大学
ディペンダブル集積システム研究センター（DISC）
特別講演のご案内

日時：　令和２年１１月１７日（火）　１６：２０～１７：５０

形式：　Zoom を利用したオンライン講演
https://kyutech-ac-jp.zoom.us/j/94708631314?pwd=T2MrSHdpSjg5dVhqUjdKSXZ3UFJSZz09
Meeting ID: 947 0863 1314
Passcode: 789955

講師：　Prof. Ilia Polian (University of Stuttgart, Germany)

題目：　**Stochastic Computing: Towards Enabling Rich Applications in Constrained Systems**

Emerging "sensory swarm" and "edge computing" paradigms rely on local information processing by resource-constrained nodes, thus reducing the required communication with central cloud infrastructure. Stochastic Computing (SC) offers extremely compact, error-tolerant and power efficient implementations of certain complex functions, at the expense of longer computation times and some degree of inaccuracy. Initially introduced as a technology "in between" analog and digital circuits, SC has experienced a revival in the last few years. Breakthroughs are being reported in applications such as digital filters, image-processing algorithms, Bayesian inference, LDPC decoding, and neural networks. The presentation will demonstrate combinational and sequential SC primitives, their integration into a larger system, and interfacing between stochastic and binary domains. We will discuss SC's advantages, drawbacks and potential solutions to overcome these drawbacks. Finally, we will give a brief overview of somewhat more futuristic SC applications: direct processing of neural signals; straightforward integration with memristive technology; and neural networks secured against adversarial attacks.

Dr. Ilia Polian is a Full Professor and the Director of the Institute for Computer Architecture and Computer Engineering at the University of Stuttgart, Germany. He received his Diplom (MSc) and PhD degrees from the University of Freiburg, Germany, in 1999 and 2003, respectively. Prof. Polian co-authored over 200 scientific publications and received two Best Paper Awards. He is a Senior Member of IEEE. Prof. Polian is the Speaker of DFG's Priority Program 2253 "Nano Security" and a Director of Graduate School "Intelligent Methods for Test and Reliablity" in Stuttgart (funded by Advantest). His scientific interests include hardware-oriented security, emerging architectures, test methods, and quantum computing.

連絡先：温暁青（DISC）　Tel: 0948-29-7891
Email: wen@cse.kyutech.ac.jp