Informatik-Kolloquium

The Department of Computer Science of Johannes Kepler University Linz[1] together with the Austrian Society of Computer Science (ÖGI) invites to the following talk:

Radu Grosu

Technical University, Vienna

Towards Explainable RNNs: Modeling, Learning and Verification

November 12th, 2018, 17:15 – 18:00

Johannes Kepler University Linz, Science Park **3 055**

Abstract: We introduce a new type of recurrent neural networks which we call WormNets, as they were inspired by a biophysical model for neurons and synapses in the C. Elegans worm. WormNets are interpretable, smaller in size, and more robust to noise attacks when compared to classic RNNs. They can also take advantage of the rich trove of neural policies developed by nature through billions of years of evolution. We show how to model with WormNets and learn their parameters, or even learn the WormNets from scratch, without considerable penalty, by using state-of-the-art RNN learning techniques. We also discuss how to verify WormNets.

About the Speaker: Radu Grosu is a full Professor and the Head of the Cyber-Physical Systems Group within the Institute of Computer-Engineering of the Vienna University of Technology. Grosu is also a Research Professor at the Department of Computer Science, of the State University of New York at Stony Brook, USA.

[1] The department consists oft he following institutes:
Anwendungsorientierte Wissensverarbeitung (FAW), Bioinformatik, Computational Perception, Computer-Architektur, Computergrafik, Formale Modelle und Verifikation, Informationsverarbeitung und Mikroprozessortechnik (FIM), Integrierte Schaltungen, Pervasive Computing, Systems Engineering and Automation, Systemsoftware, Telekooperation

ÖGI-Sekretary, Monika Neubauer
Johannes Kepler University Linz, Altenberger Straße 69, A-4040 Linz, Austria
oegi@fim.uni-linz.ac.at http://oegi.ocg.at

The research interests of Radu Grosu include modelling, analysis and control of cyber-physical systems and of biological systems. The applications focus of Radu Grosu includes smart-mobility, Industry 4.0, smart-buildings, smart-agriculture, smart-health-care, smart-cities, IoT, cardiac and neural networks, and genetic regulatory networks.

Radu Grosu is the recipient of the National Science Foundation Career Award, the State University of New York Research Foundation Promising Inventor Award, the Association for Computing Machinery Service Award, and is an elected member of the International Federation for Information Processing, Working Group 2.2.

Before receiving his appointment at the Vienna University of Technology, Radu Grosu was an Associate Professor in the Department of Computer Science, of the State University of New York at Stony Brook, where he co-directed the Concurrent-Systems Laboratory and co-founded the Systems-Biology Laboratory.

Radu Grosu earned his doctorate (Dr.rer.nat.) in Computer Science from the Faculty of Informatics of the Technical University München, Germany. He was subsequently a Research Associate in the Department of Computer and Information Science, of the University of Pennsylvania, an Assistant, and an Associate Professor in the Department of Computer Science, of the State University of New York at Stony Brook, USA.

Host: *Prof. Dr. Armin Biere*

[1] The department consists oft he following institutes:
Anwendungsorientierte Wissensverarbeitung (FAW), Bioinformatik, Computational Perception, Computer-Architektur, Computergrafik, Formale Modelle und Verifikation, Informationsverarbeitung und Mikroprozessortechnik (FIM), Integrierte Schaltungen, Pervasive Computing, Systems Engineering and Automation, Systemsoftware, Telekooperation