Charles University
Faculty of Mathematics and Physics

Cordially invites you to

22nd Jarník's Lecture

Using Formal Grammars in Automated Planning

Given by

Prof. Roman Barták
(Charles University)

On Wednesday, October 4, 2023 at 1 p.m.

In Strouhal´s auditorium (F1),
MFF UK
Ke Karlovu 5, Prague 2

The lecture will be also streamed at:
https://cesnet.zoom.us/j/97730845074?pwd=ZElEOFhXOGFEMm1BWi8rdmlXMWE1QT09

The lecture is a part of the celebration of the 30th anniversary of the School of Computer Science MFF UK, see https://cs.mff.cuni.cz/en

Abstract: Grammars are defining rewriting rules on how to obtain a string in some language. In 1959, Chomsky formalized generative grammars and classified them into types with different expressive powers now known as the Chomsky hierarchy. Grammars can also be used outside languages, e.g., to model the morphology of a variety of organisms or to model the structure of plans. In this talk, we describe the relation between context-free grammars and hierarchical planning. The plan is a sequence of actions to solve a task and in addition to causal relations among actions, the structure of action sequence may be derived from task decompositions similar to grammar rewriting rules. We discuss how techniques developed for formal grammars, such as parsing, can be used to solve a variety of problems in planning, namely plan verification, plan recognition, and plan correction. We highlight the similarity of these problems and propose a research plan leading to a unifying platform for hierarchical planning in autonomous systems.

Roman Barták is a professor and chair of the Department of Theoretical Computer Science and Mathematical Logic, Faculty of Mathematics and Physics, Charles University. His research is in Artificial Intelligence, in particular automated planning and scheduling, constraint satisfaction, and knowledge representation. Recently, he worked mainly on multi-agent path finding and hierarchical planning. He published more than 200 research papers, led 19 research projects, and actively co-operated with industry worldwide (USA, Israel, Ireland, Czech Republic). He is a head of the AI special group of the Czech Society for Cybernetics and Informatics (ČSKI), a senior member of the Association for Computing Machinery (ACM) and Association for Advancement of Artificial Intelligence (AAAI), and EurAI Fellow. In 2019, he received the AI Award for promoting the Czech Republic in AI World.