Plan and Program Synthesis: A New Look at Some Old Problems

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Abstract

The proliferation of programmable devices, personal assistants, and autonomous systems presents fundamental challenges to the deployment of safe, predictable systems that can work together, interact seamlessly with humans, and that are taskable and instructable by people who may not know how to program. In this talk, we will revisit the classical problem of program synthesis through the lens of AI automated planning. We will present recent advances in AI automated planning principles and computational methods that support the synthesis of plans with goals and preferences specified in Linear Temporal Logic and Regular Expressions. Moving from automated planning in deterministic domains to planning in nondeterministic domains, we will explore the pathway to synthesizing programs that are taskable and instructable by exploiting state-of-the-art AI planning technology.

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