
THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Faculty Seminar

on Thursday, Jan 14, 2021 at 11:00

<https://weizmann.zoom.us/j/97604026721?pwd=SVZnd3NsQXBqNHFhOU04bTFNQVRhQT09>

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Next Generation Programming with Program Synthesis

Abstract:

Program synthesis is the problem of generating a program to satisfy a specification of user intent. Since these specifications are usually partial, this means searching a space of candidate programs for one that exhibits the desired behavior. The lion's share of the work on program synthesis focuses on new ways to perform the search, but hardly any of this research effort has found its way into the hands of users.

We wish to use synthesis to augment the programming process, leveraging both optimized search algorithms and concepts that are part of the programmer's life such as code review and read-eval-print loops (REPL). This talk describes three synthesis-based techniques that bring program synthesis into the development workflow.

A major concern in designing for the user is that it can put the interface of the synthesizer at odds with state of the art synthesis techniques. Synthesis is, at best, a computationally hard problem, and any changes made to make the tool more usable can interfere with the synthesizer and its internals. We therefore demonstrate the process of bringing synthesis theory into practice when tool design also requires an algorithm re-design.

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