CPS: Small: Syntax-Guided Synthesis for Cyber-Physical Systems (Award # 1837506 10/1/2018)
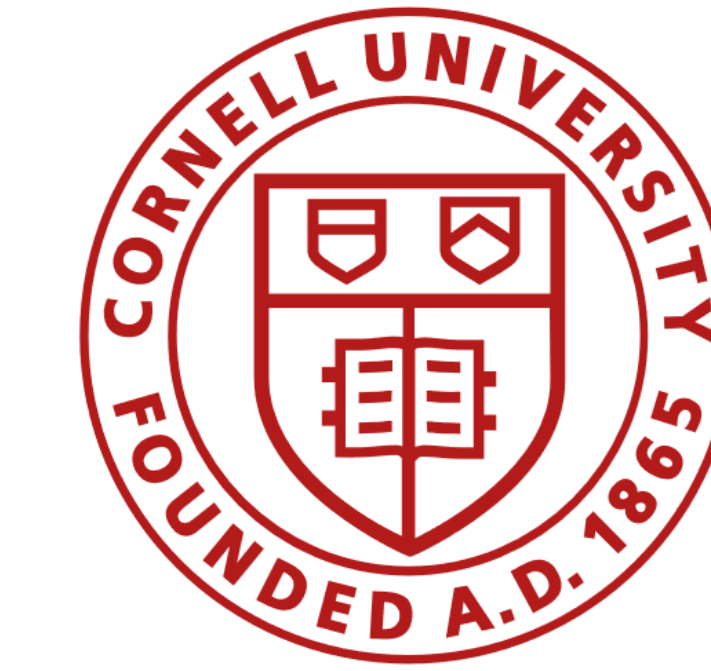## PI: Hadas Kress-Gazit
Cornell University

VERIFIABLE ROBOTICS RESEARCH GROUP

CORNELL UNIVERSITY FOUNDED A.D. 1865

Challenge:

- Correct-by-construction synthesis of both structure and controls of CPS from high-level specifications.

- Defining rich task specifications

Solution:

- Task description languages that include points, shape primitives and physical constraints

- Solving for feasible solutions, in a bounded synthesis approach with verification in the loop

+ Task

Automated Synthesis of Structure and Controls
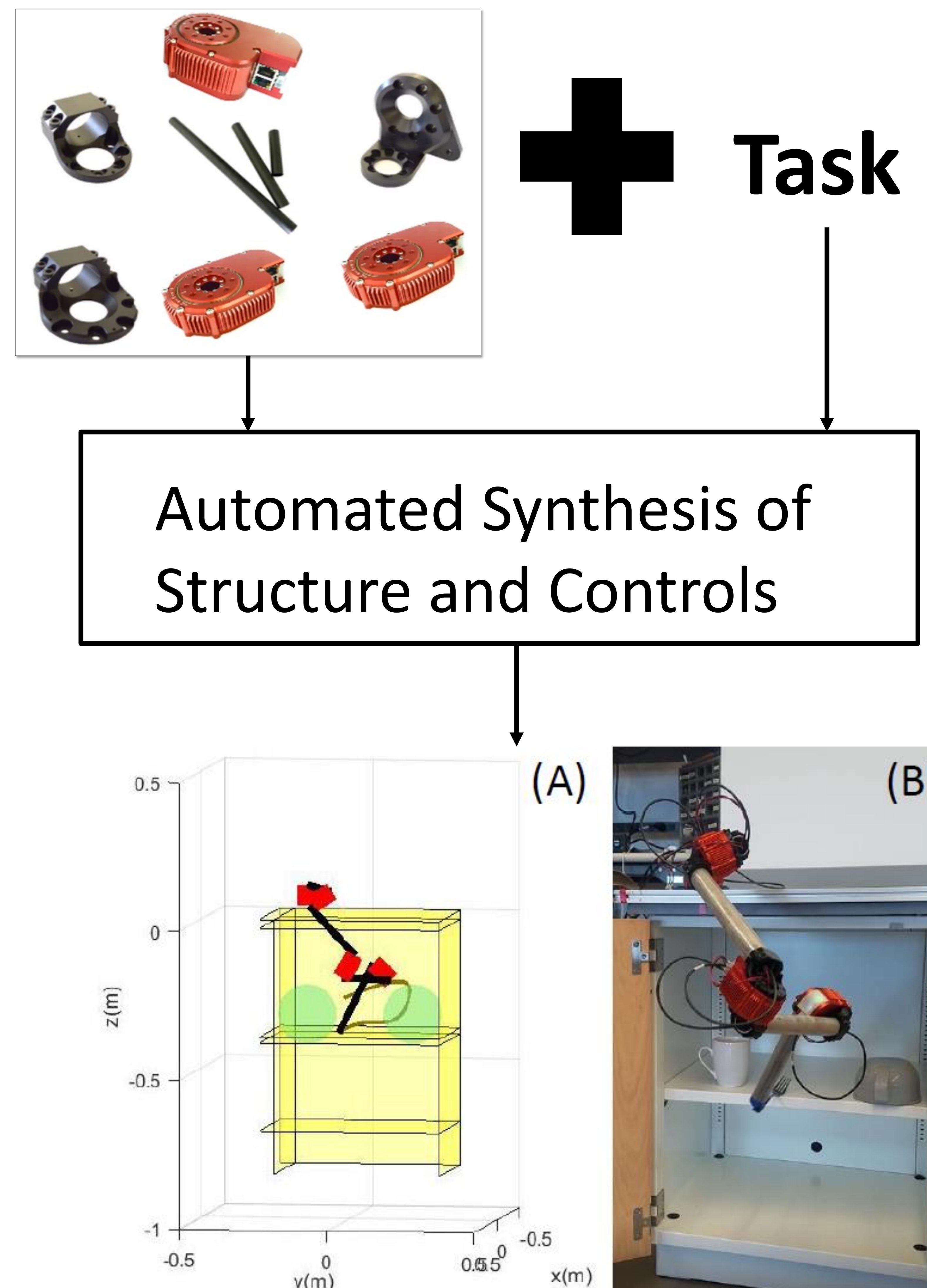
Scientific Impact:

- Create framework for correct-by-construction synthesis of CPS that generalize to different CPS domains

Broader Impact:

- Enables non-expert users to create provably-correct CPS from a high-level specification

- T. Campos, J. P. Inala, A. Solar-Lezama, and H. Kress-Gazit, Task-Based Design of Ad-hoc Modular Manipulators, International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 2019
- T. Campos, S, Marri, and H. Kress-Gazit, Automated Synthesis of Modular Manipulators' Structure and Control for Continuous Tasks around Obstacles, Robotics: Science and Systems (RSS), July 2020.