

SpeechPizza

Thursday, 20 April 2023

12:00 - 13:00, D011

lcis.grenoble-inp.fr

Sébastien Michelland sebastien.michelland@lcis.grenoble-inp.fr

(1st year PhD candidate within CTSYS team, supervised by L. Gonnord and C. Deleuze)

Title: The time and place for language semantics

Abstract: Semantics is the art of writing down rigorously what programs do. But why, or better still, when is that important? Why is source code not already a self-description of the program? What does this weird symbol "" even mean?! This talk will tackle semantics from a non-specialist's perspective to provide an intuition of when semantics can help and what to do when encountering them in the wild.

Huu Thinh Do huu-thinh.do@lcis.grenoble-inp.fr

(2nd year PhD candidate within CO4SYS team, supervised by I. Prodan)

Title: Indoor experimental validation of MPC-based trajectory tracking for a quadcopter

Abstract: Differential flatness has been used to provide diffeomorphic transformations for non-linear dynamics to become a linear controllable system. This greatly simplifies the control synthesis since in the flat output space, the dynamics appear in canonical form (as chains of integrators). The caveat is that mapping from the original to the flat output space often leads to nonlinear constraints. In particular, the alteration of the feasible input set greatly hinders the subsequent calculations. In here, we particularize the problem for the case of the quadcopter dynamics and investigate the deformed input constraint set. An optimization-based procedure will achieve a non-conservative, linear, inner-approximation of the non-convex, flat-output derived, input constraints. Consequently, a receding horizon problem (linear in the flat output space) is easily solved and, via the inverse flat mapping, provides a feasible input to the original, nonlinear, dynamics. Experimental validation and comparisons confirm the benefits of the proposed approach and show promise for other class of flat systems (the video is available at: https://youtu.be/1a1K6R6__3s).

The science behind pizza!

