

Einladung

Am Montag, 28.01.2013, 14.00 Uhr, findet
in Gebäude C7.4, Konferenzraum 1.17, ein Vortrag

von

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zum Thema

Control-Oriented Modelling of a Helicopter UAV

statt.

Model-based control of a helicopter UAV requires a dynamics model with the following characteristics: system equations of sufficiently low order and complexity to be usable yet which adequately capture the physics of the vehicle; physically controllable inputs, which requires modelling of the mechanization of the helicopter controls including servo operation, the Bell-Hiller stabilization system and the tail gyro unit; and parameter values identified by direct experiments on the vehicle. The proposed model consists of 6 DoF rigid-body dynamics augmented with lumped-parameter models of the helicopter subsystems - main rotor, flybar, fuselage body, tail stabilizers and tail rotor - using a first-principles approach to explain which assumptions are being made. We describe the parameter identification details for our specific vehicle, a gas-powered Bergen Industrial Twin helicopter UAV platform developed at the University of Alberta. Based on the identified parameter values, the model is simplified further. The end result is a nonlinear model of the helicopter capturing the full flight envelope (hover, climb and fast forward flight) and its simplification to the case of hover useful for a first version of model-based control design.

**Alle Interessenten sind herzlich eingeladen.
Prof. Dr.-Ing. habil. J. Rudolph**