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A Platform for Cooperative and Coordinated Control of Multiple Vehicles: The Caltech Multi-Vehicle Wireless Testbed

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The Caltech Multi-Vehicle Wireless Testbed (MVWT) is an experimental platform for investigating the increasingly important intersecting frontiers of reliable distributed computation, communication and control. The testbed consists of eight autonomous vehicles equipped with onboard sensing, communication and computation. The vehicles are underactuated and exhibit nonlinear second-order dynamics, key properties that capture the essence of similar real-world applications at the forefront of cooperative control.

The relative simplicity of the testbed facilitates the investigation and application of novel ideas in reliable computing, real-time optimal control, stability of interconnected systems, control of and over networks, and formation flight. In this paper, we describe in detail the MVWT and its components so that readers may envision how it can be used to provide proof-of-concept for new techniques in multi-vehicle control.

Conference paper: [pdf](#) (2.38MB)

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