



Séminaire Systèmes Complexes

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Vidéo recording :



Inigo Incer
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Designing complex systems using assume-guarantee contracts

Abstract Systems companies struggle to integrate into complex designs components coming from various providers. The news of recalls and re-certifications in the automotive and aerospace industries is an eloquent testimony to the difficulty of system design. Many voices from government agencies, industry, and academia have thus called for the development of theoretical and practical tools to provide assurance of the correctness of our complex systems.

Assume-guarantee contracts provide a theoretical and methodological framework to compositionally design systems with rigorous guarantees. In this talk, we will introduce contracts and their algebraic operations through case studies in space mission design and autonomous driving that show where current system design methodologies struggle. We will also introduce Pacti, a software package that enables engineers to carry out system-level design using contracts.

Speaker Bio Inigo Incer is an Assistant Professor of Electrical and Computer Engineering at the University of Michigan, where he leads the Complex Engineering Systems Laboratory. He obtained his PhD in Electrical Engineering and Computer Sciences from UC Berkeley in 2022 and was subsequently a postdoctoral researcher at Caltech. He is interested in all aspects of cyber-physical systems, emphasizing formal methods and AI that support their compositional design and analysis.



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