Dynamic Systems and Control

ILLINOIS

Alleyne Research Group

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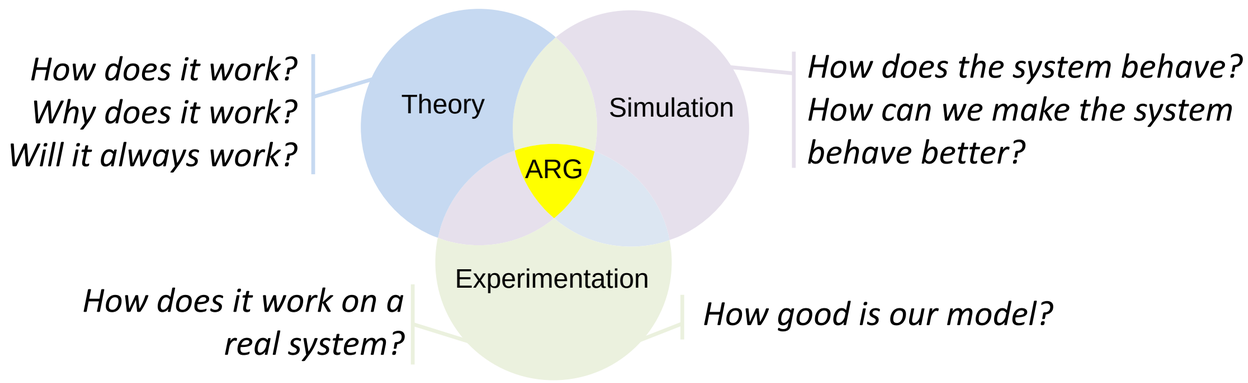
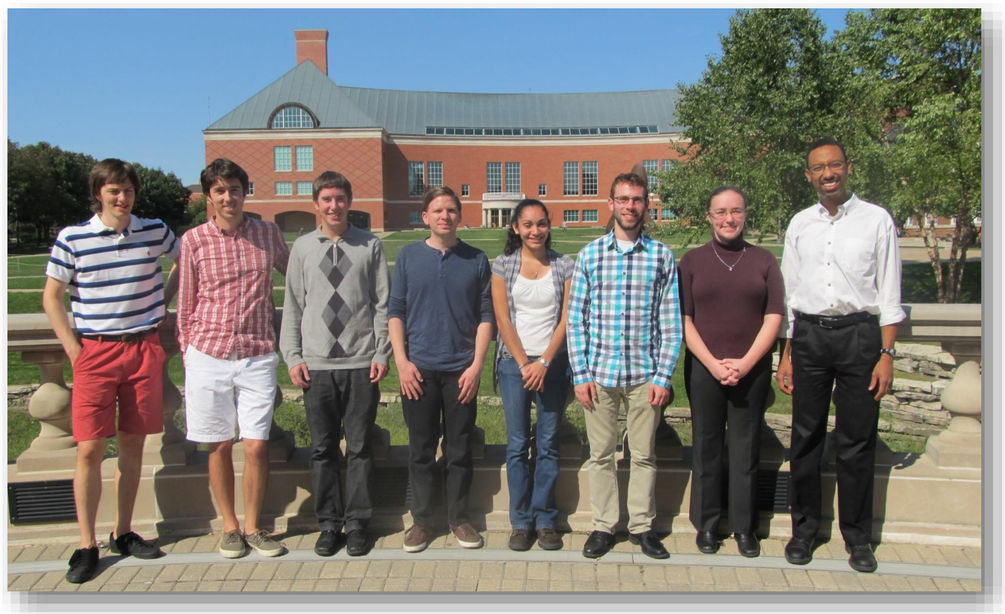
http://arg.mechse.illinois.edu/

Applied Controls Research

The Alleyne Research Group (ARG) works at the intersection of theoretical control, dynamic modeling and simulation, and hardware-based experimental validation by applying a wide variety of control techniques to solve important societal problems.

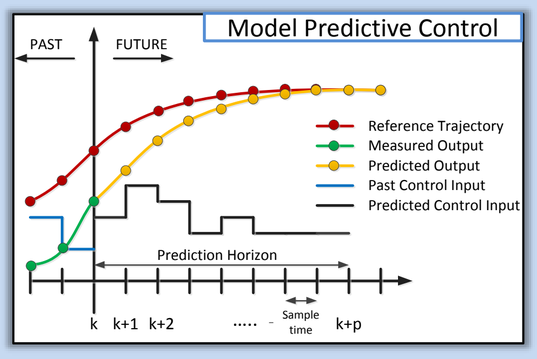


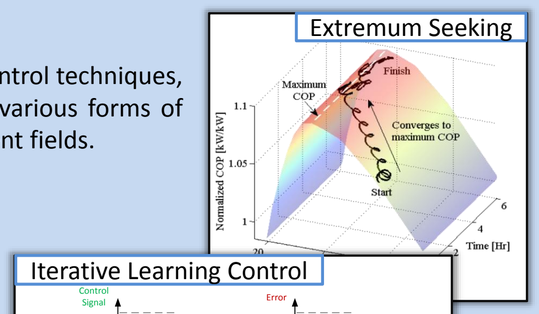


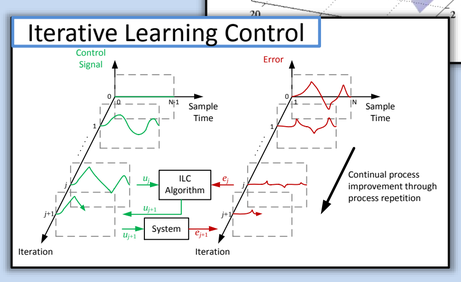
What we do & where we are going

Theory

Theory is central to the development of novel control techniques, and the Alleyne Research Group (ARG) utilizes various forms of control theory to advance control in many different fields.



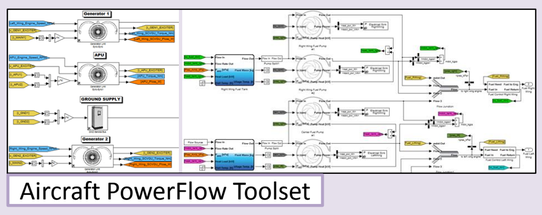


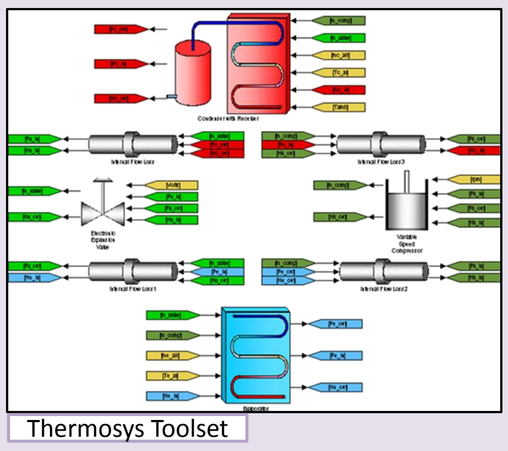


Simulation

MATLAB/Simulink is used extensively to develop and test controllers prior to implementation on hardware.

ARG has developed many toolsets over the years, several of which are actively used in industry.

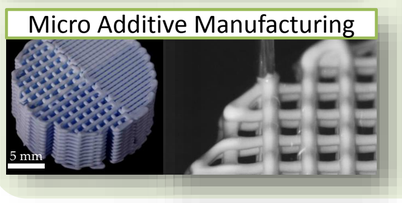

Aircraft PowerFlow Toolset

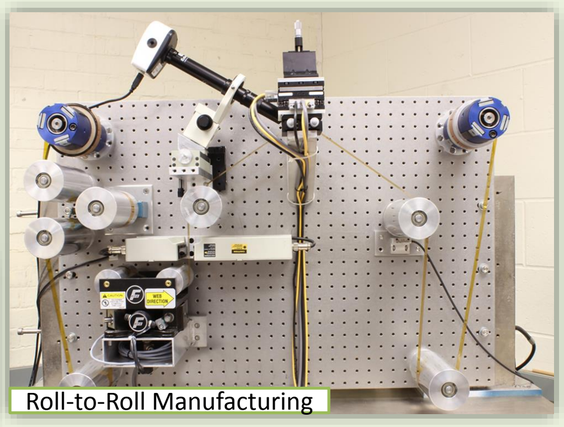

Thermosys Toolset

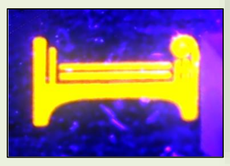
Experimentation

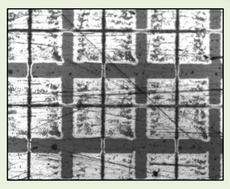
ARG is home to several energy system and manufacturing experimental platforms. New experimental systems are developed frequently and students have access to many platforms within the lab and the school of engineering.

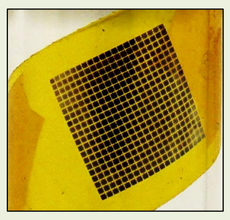

Vapor Compression Systems

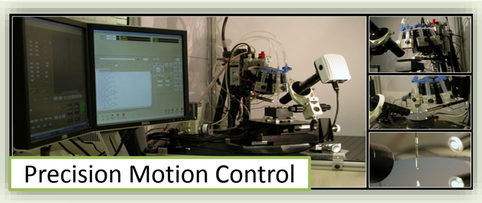

Micro Additive Manufacturing

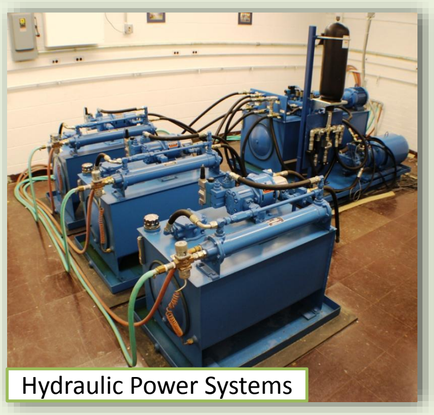

Roll-to-Roll Manufacturing

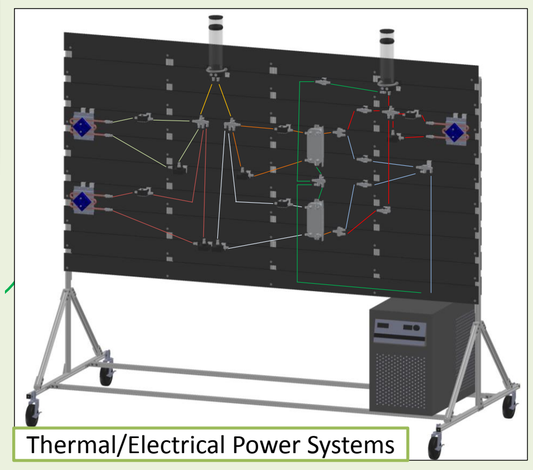







Precision Motion Control


Hydraulic Power Systems


Thermal/Electrical Power Systems

The newest experimental system seeks to emulate the interaction between thermal and electrical systems of an aircraft.

Developing Great Research and Great People