

Research in Control Systems

The Systems Control Group

ECE Dept

We do

basic & applied research in control engineering.

The Profs

Mireille Broucke - grad coord

Ted Davison - emeritus

Bruce Francis - chair

Raymond Kwong

Manfredi Maggiore

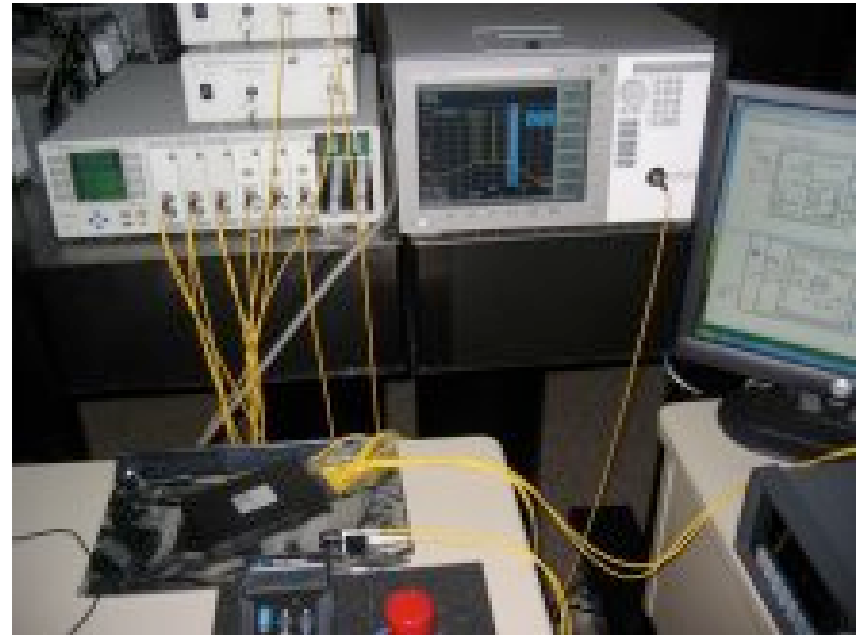
Lacra Pavel

Murray Wonham - emeritus

Example recent topics

Lacra Pavel

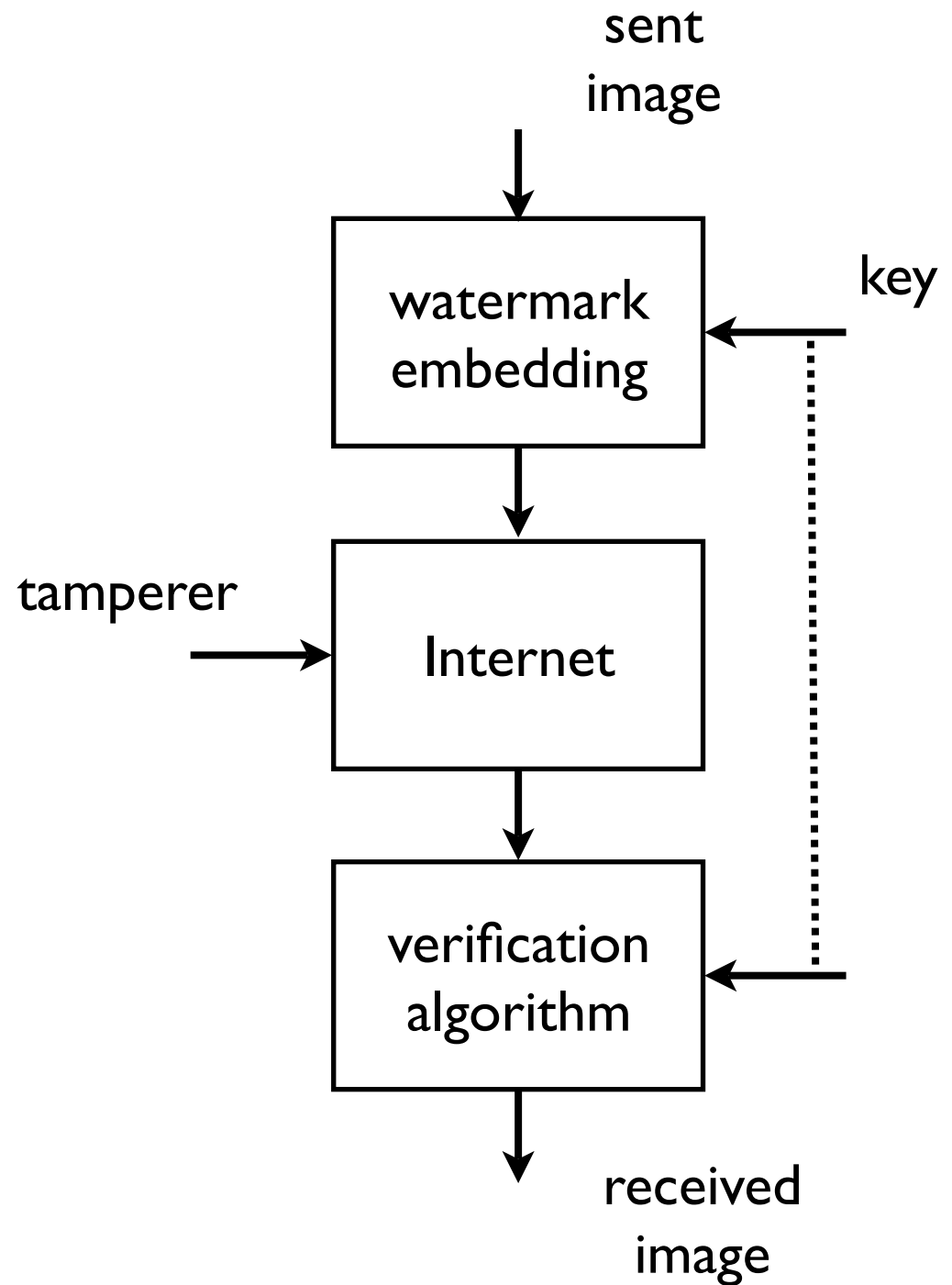
control theory
applied to optical
communication
networks



- OSNR optimization via game theory
- erbium-doped fibre amplifier design

Raymond Kwong

analysis and design of a watermark-based system to authenticate content



Manfredi Maggiore

nonlinear control
theory

appl'n to magnetic
levitation, micro
positioning system

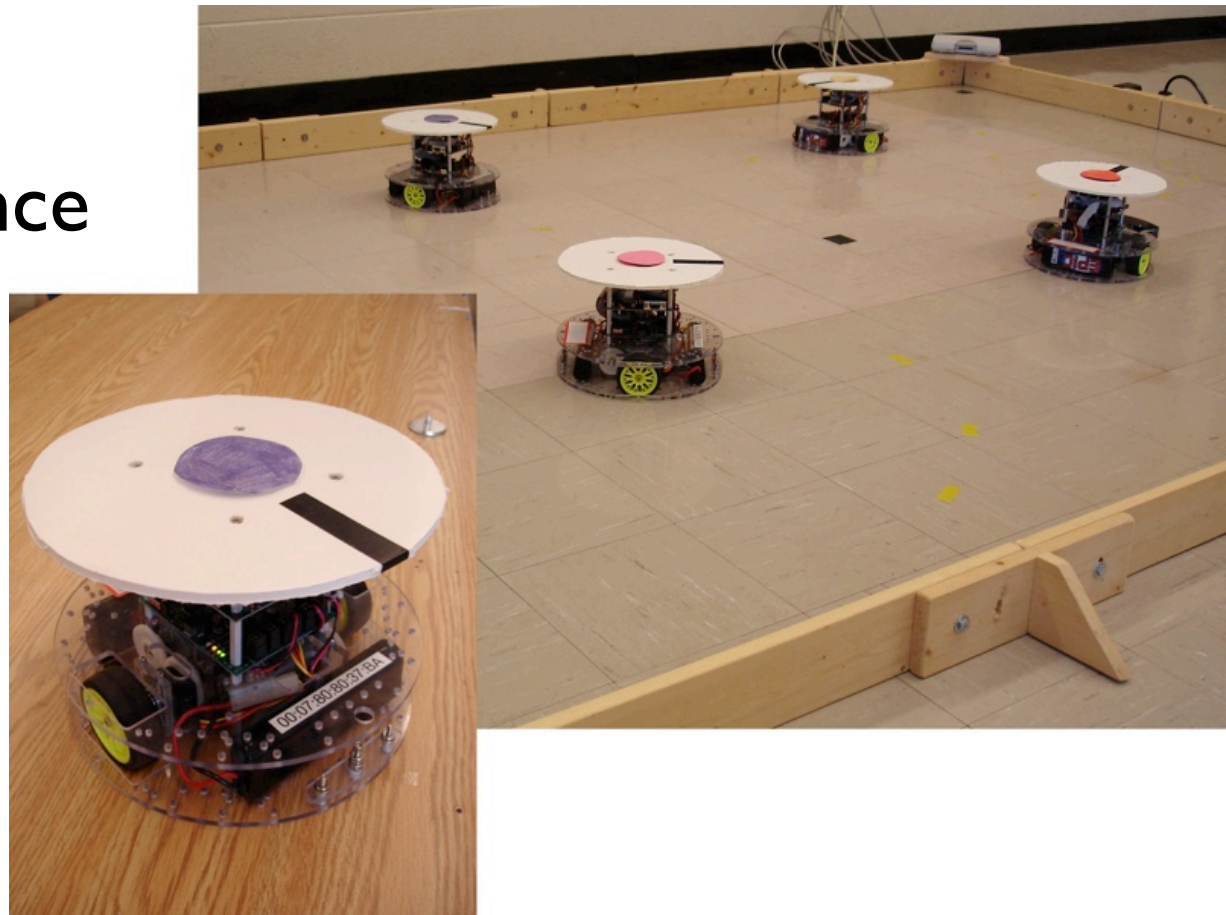


Mireille Broucke

distributed control
of mobile autonomous
robots

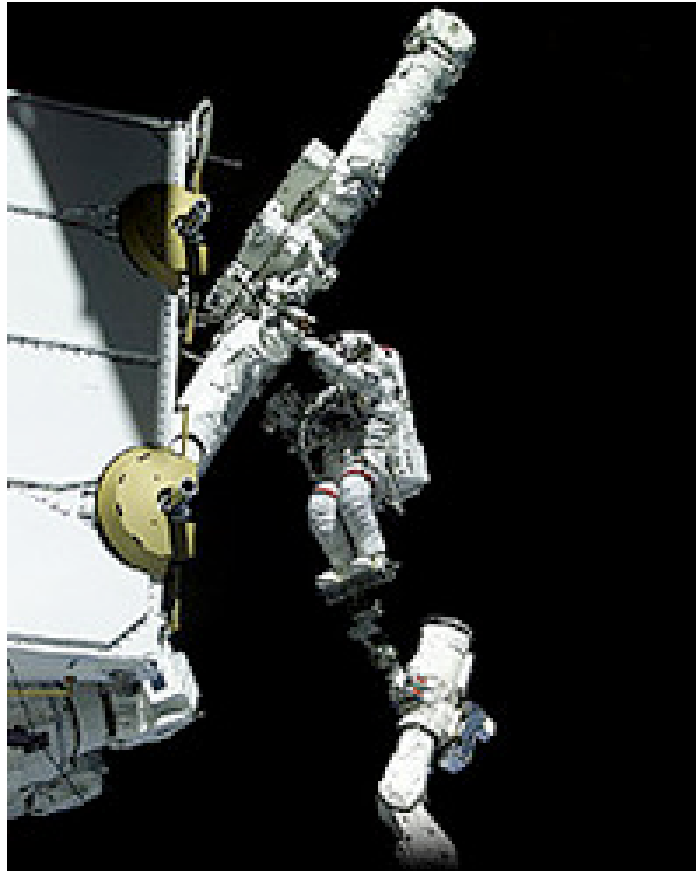
- formations
- collision avoidance

hybrid
systems



Examples of where our students go

Josh Marshall → MacDonald Dettwiler Associates



“A recent area of interest at MDA is autonomous vehicles; for example, Mars rovers and robot mining vehicles.

“My job is to develop the new and innovative algorithms that enable such vehicles to use onboard sensors to autonomously perform tasks in unknown, unstructured, and possibly hazardous environments.

“This job requires me to apply research skills as well as techniques from mechanical, electrical, and software engineering to solve what I think are some very exciting and leading edge problems in robotics!”

Brydon Owen → New Flyer Industries, Winnipeg

North America's leading
manufacturer of transit vehicles.



“My duties involve the design and maintenance of all aspects of the vehicle electrical system.

“As part of the electrical system design, New Flyer makes use of many different types of industrial controller technology to actuate vehicle features (lights, motors, hydraulics) and monitor performance (engine, transmission, fuel efficiency).

“My duties will eventually involve the programming and testing of such industrial controllers as well as interacting with the vendors that supply the technology.”

Control grad courses for everyone

ECE557F Systems Control

Broucke

an Eng Sci course

basic state space theory

lab

ECEI 647F Intro to Nonlinear Control Systems

Maggiore

1. Basic dynamics
2. Basic stability theory
3. Regulator theory
4. Applications