

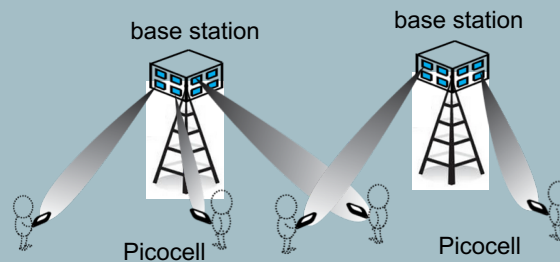
COMMUNICATIONS, CONTROLS & SIGNAL PROCESSING (CCSP)

- Communications
- Control
- Signal Processing

COMMUNICATIONS

Has completely transformed our lives over the last 2-3 decades
Internet Edge--Cellular, WiFi (Qualcomm, Broadcom, Apple, Samsung)
Internet core (Cisco, Juniper)
Applications (Google, Facebook)

UCSB's ComSenter aims to drive the next phase in this revolution



1000-10000X increased capacity at the edge

COMMUNICATIONS SEQUENCE

- ECE I46A: Digital Communication Fundamentals
- ECE I46B: Communication Systems Design

Intellectual framework

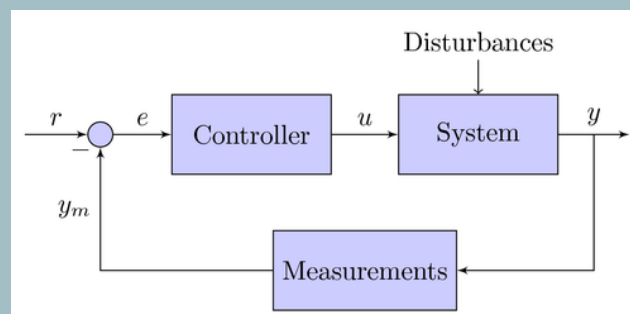
Probabilistic modeling, Systematic design principles
Goal is to approach fundamental limits

Portable skillset in modeling and signal processing algorithms

CONTROLS

How feedback can be used to make systems behave in a desired manner

Planes, trains, automobile, robots,...



UCSB is a world leader in controls

Center for Control, Dynamical Systems and Control (CCDC) spans multiple depts in CoE

CONTROL SEQUENCE

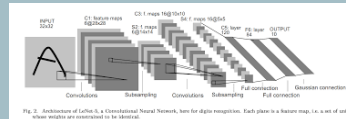
- ECE 147A: Feedback Control Systems – Theory and Design
- ECE 147B: Digital Control Systems – Theory and Design
- ECE 147C: Control System Design Project

SIGNAL PROCESSING

Very broad term: Understanding and manipulating signals

Core skillset used in pretty much every engineering discipline

Communications, control, sensing/imaging



SIGNAL PROCESSING SEQUENCE

- ECE 148: Applications of Signal Analysis and Processing
- ECE 158: Digital Signal Processing
- ECE 178: Introduction to Digital Image and Video Processing
- ECE 181: Introduction to Computer Vision

FALL WINTER SPRING

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|------------|----------|-------------------------------|
| • | ECE 146A | ECE 146B
(ECE 130C) |
| • ECE 147A | ECE 147B | ECE 147C |
| • ECE 178 | ECE 181 | ECE 148 |

DESIGN SEQUENCES

- ECE 146A & 146B
- ECE 147A & B, 147A & C
- ECE 178 & 181
- ECE 158 & 178

GREAT COMPLEMENTARY SEQUENCES

Fall	Winter	Spring
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ECE 145A	ECE 145B	
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GREAT COMPLEMENTARY SEQUENCES

■ Fall	Winter	Spring
■ ECE 145A	ECE 145B	
■ (ECE 134)	ECE 144	ECE 135

THE DEEP END

- ECE 188: Senior design projects
- ECE 192: ECE projects
- ECE 193: Research internship
- ECE 196: Undergraduate research
- ECE 199: Independent study
- ECE 200+: Graduate courses