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# Principles of Wireless Sensor Networks

<https://www.kth.se/social/course/EL2745/>

Lecture 7  
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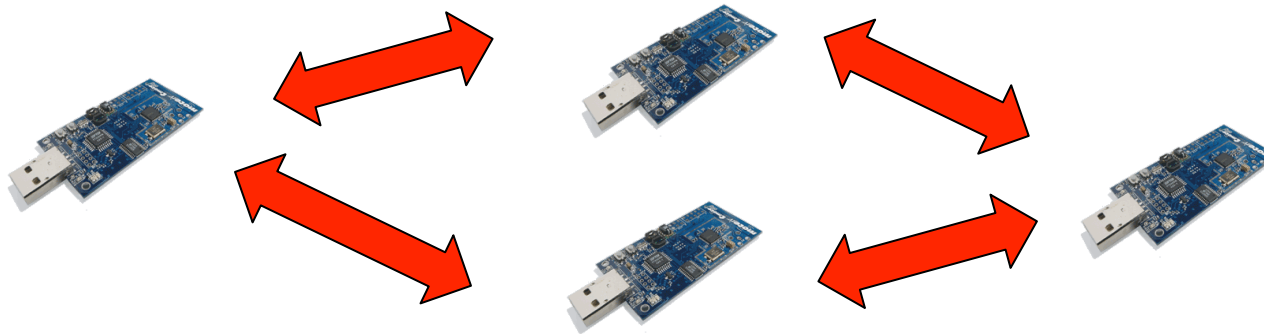
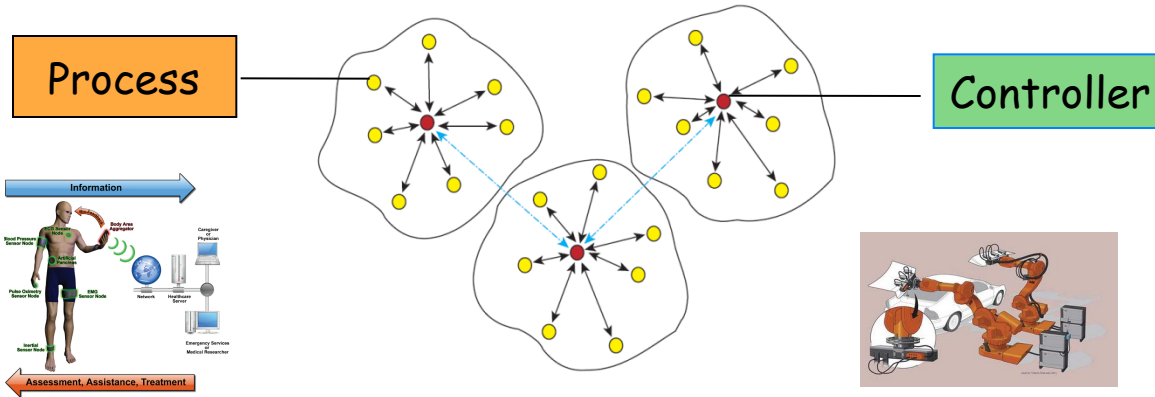
# Course content

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- Part 1
  - Lec 1: Introduction
  - Lec 2: Programming
- Part 2
  - Lec 3: The wireless channel
  - Lec 4: Physical layer
  - Lec 5: Mac layer
  - Lec 6: Routing
- Part 3
  - Lec 7: Distributed detection
  - Lec 8: Distributed estimation
  - Lec 9: Positioning and localization
  - Lec 10: Time synchronization
- Part 4
  - Lec 11: Networked control systems 1
  - Lec 12: Networked control systems 2
  - Lec 13: Summary and project presentations

# Previous lecture

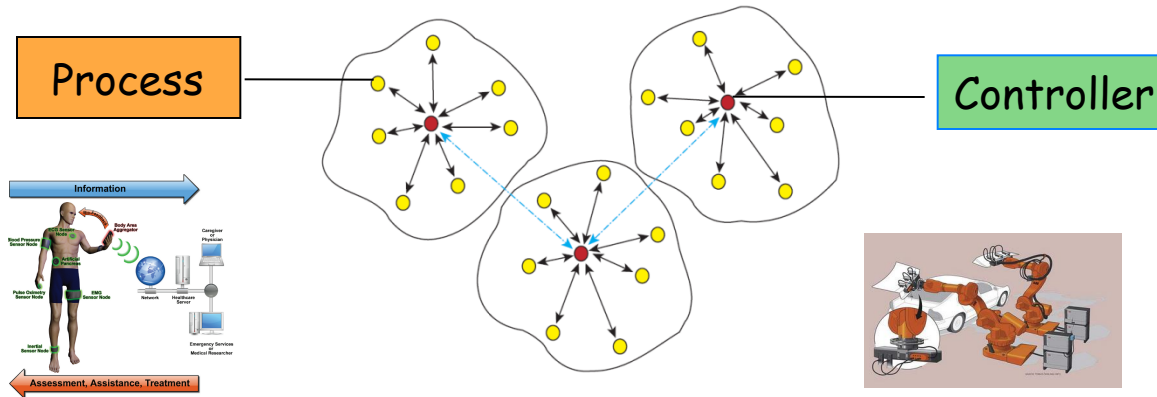
Application
Presentation
Session
Transport
<b>Routing</b>
MAC
Phy



On which path messages should be routed?

# Today's lecture

Application
Presentation
Session
Transport
Routing
MAC
Phy



- Today we study how to detect events out of uncertain (noisy) observations
- Detection is an application on top of the protocol stack
- However, detection theory can be used in other layers as well



# Today's learning goals

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- What is binary detection?
- How to detect events from one sensor?
- How to detect events from multiple sensors?



# Outline

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- Introduction to detection theory
- Detection from one sensor
  - Decision rules, MAP, LRT, ML
  - The Nyman-Person criterion
- Detection from multiple sensors
  - MAP
  - The majority rule