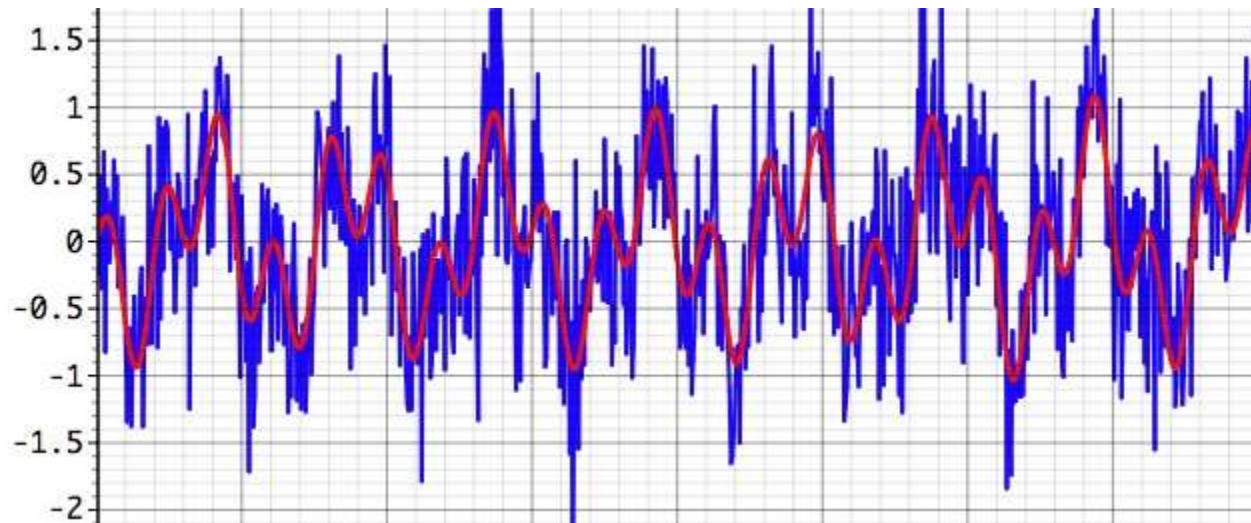
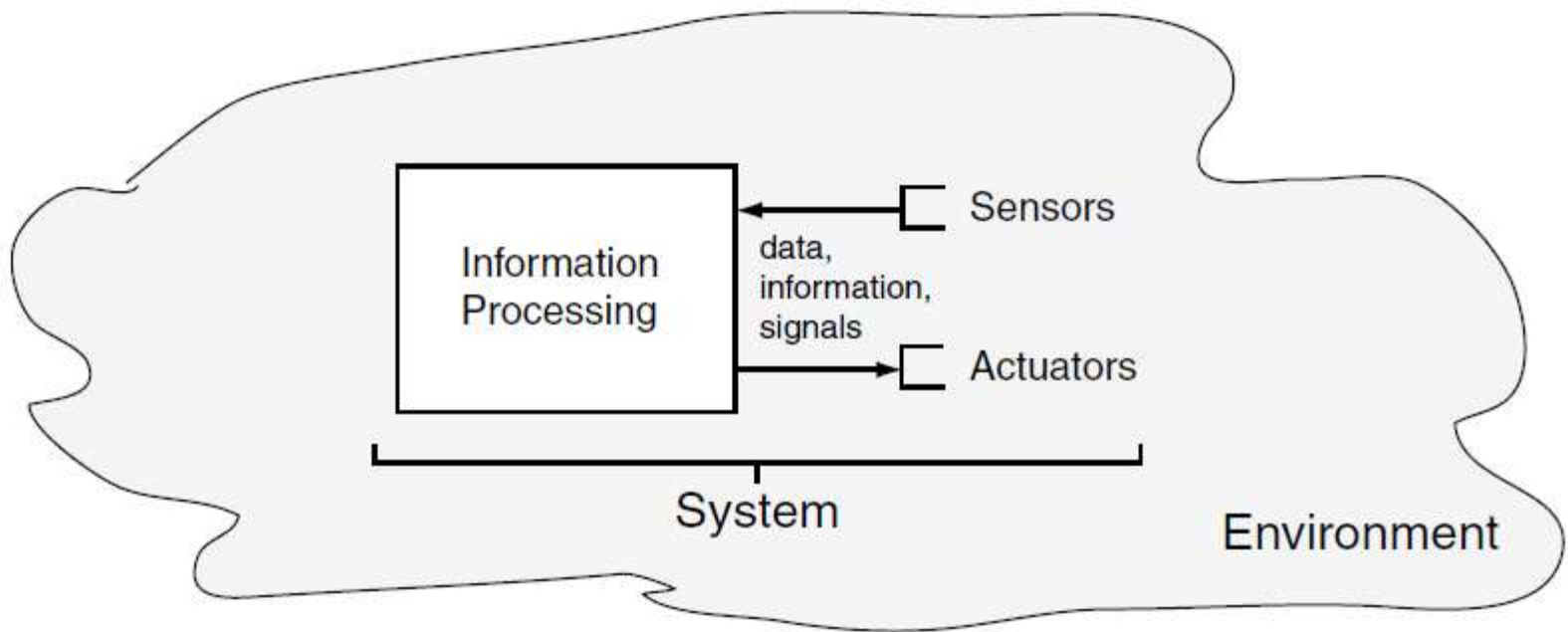
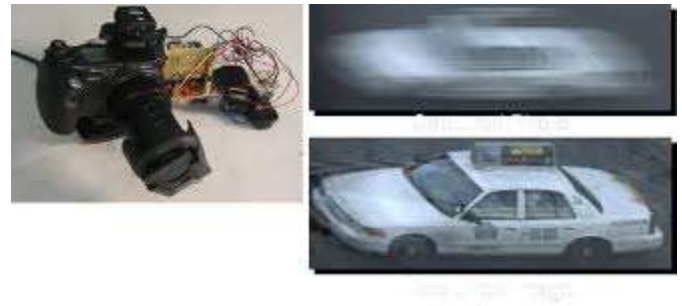


ELE 201: Information Signals





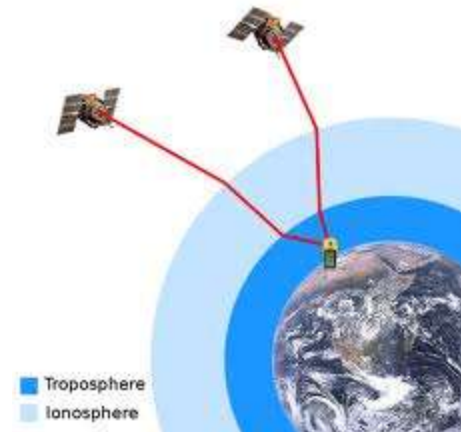
Images and Video



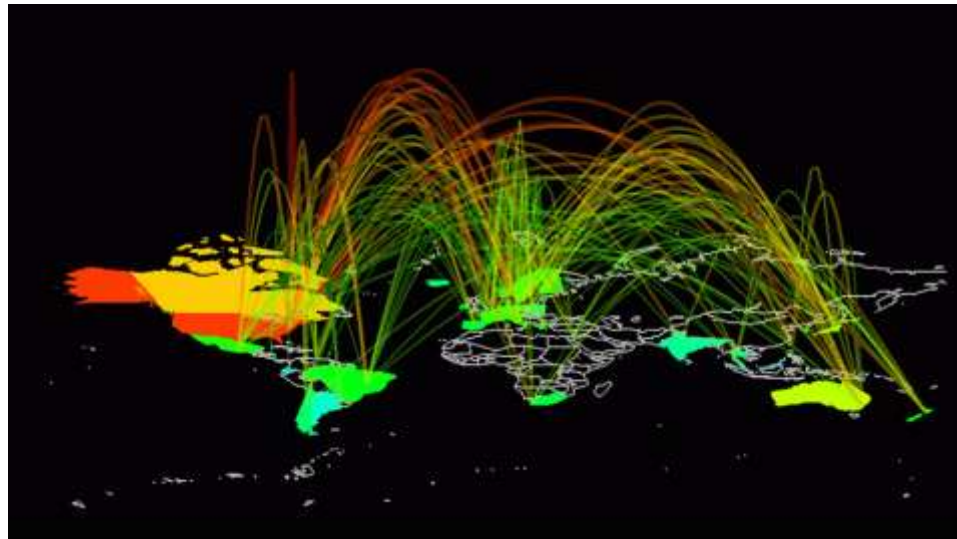
Touch surfaces



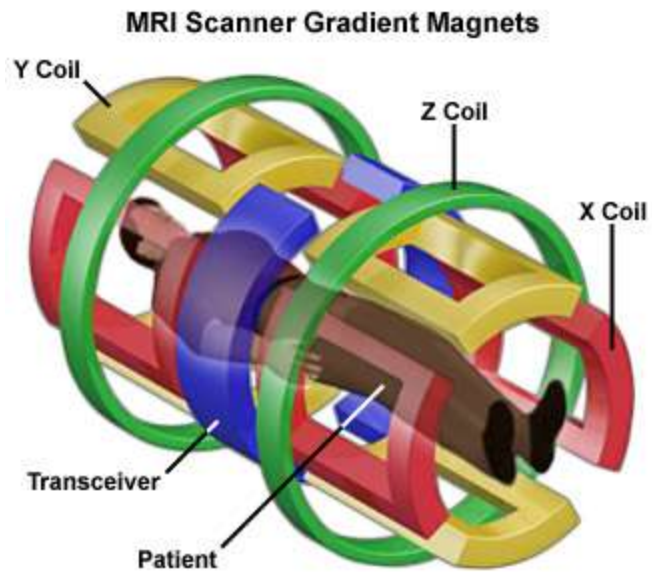
Tracking (Radar, GPS)



Digital Communication



Magnetic Resonance Imaging (MRI)



Machine Learning

Face Recognition



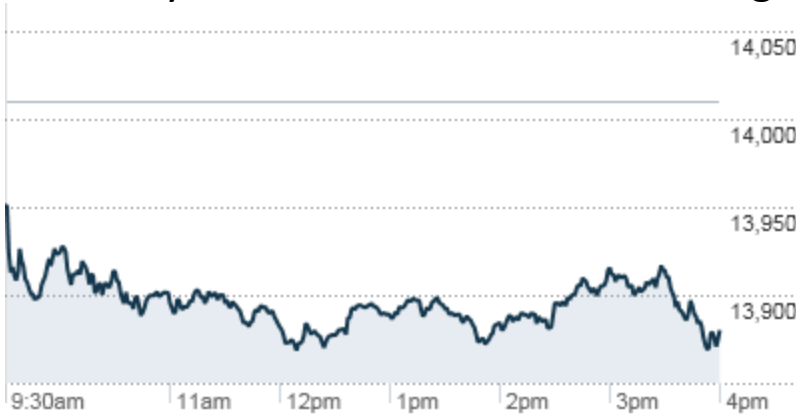
Recommendations

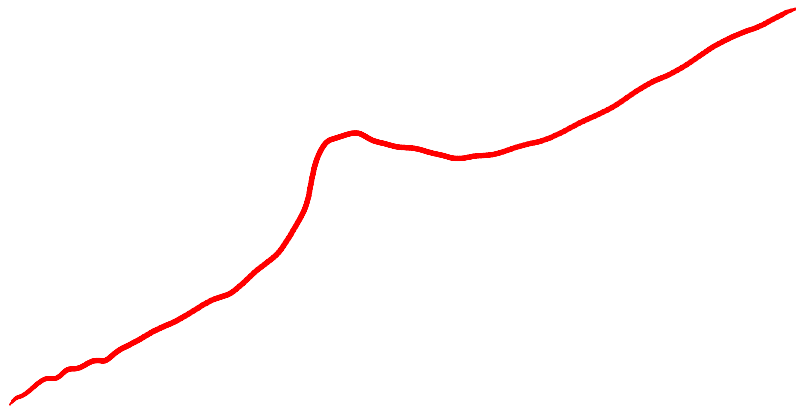
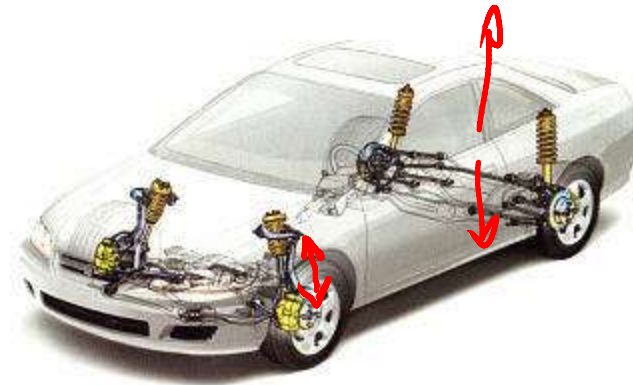


Search

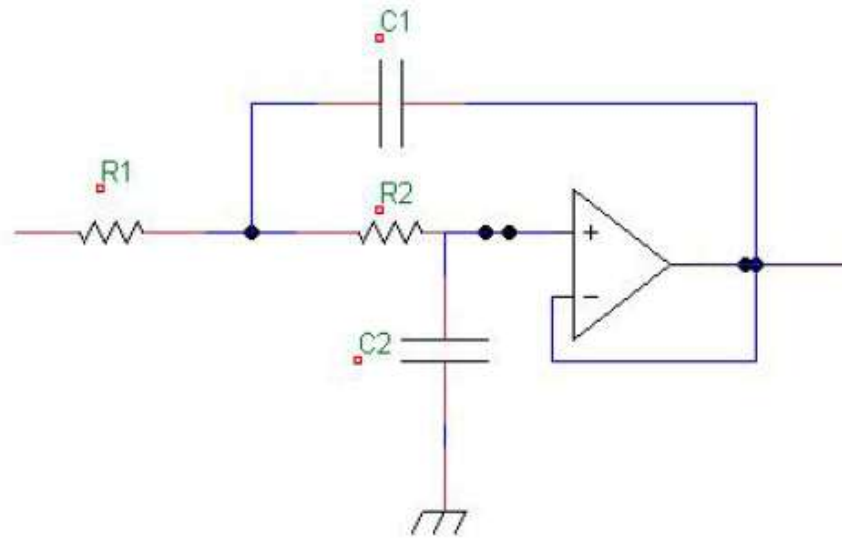


Yesterday's Dow Jones Industrial Average





Circuits



Segway

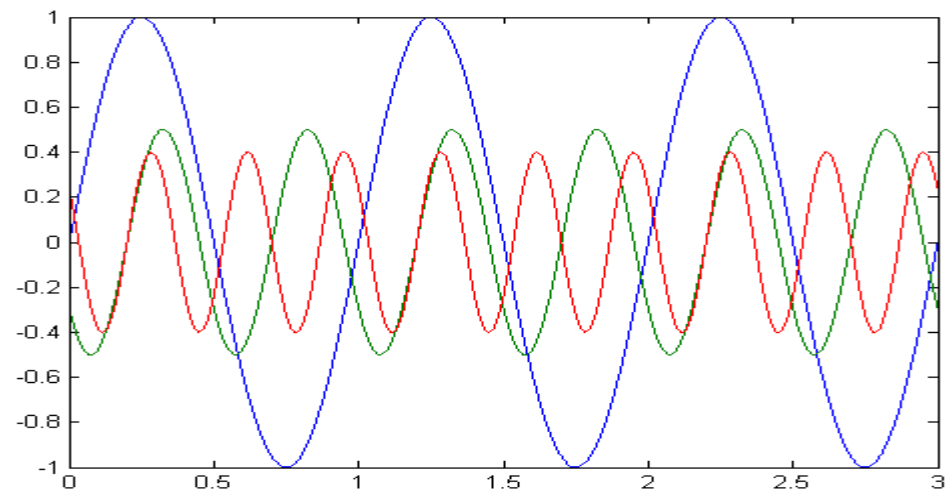
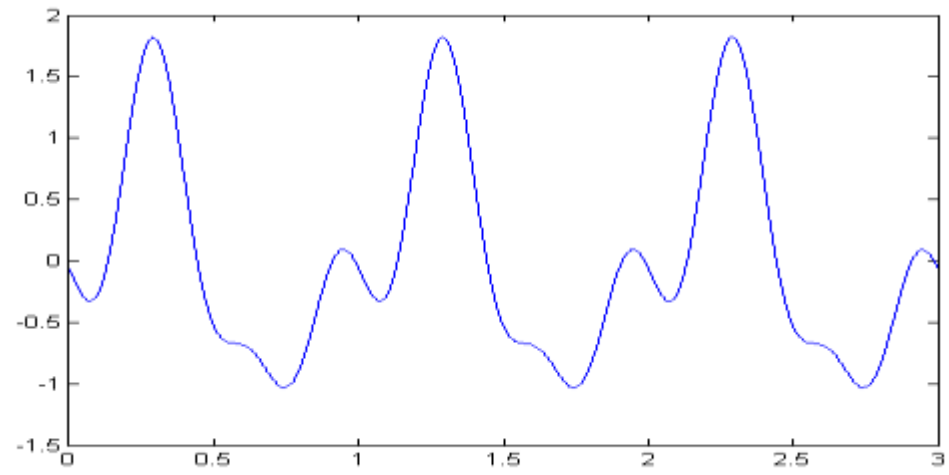


UCSD Switchblade Robot:

<http://www.youtube.com/watch?v=Dw0WxPlyWII>

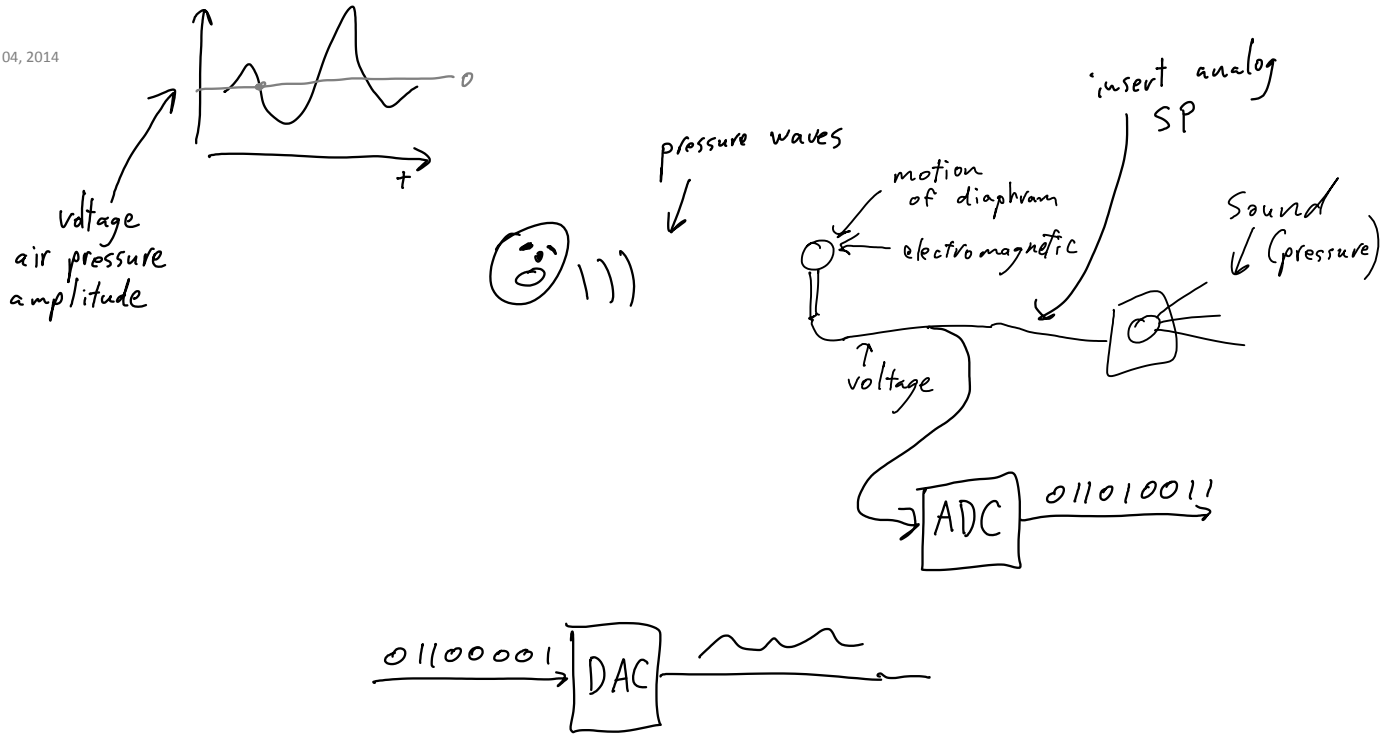
Sound





Lecture 1

Tuesday, February 04, 2014
12:57 PM



Complex Numbers:

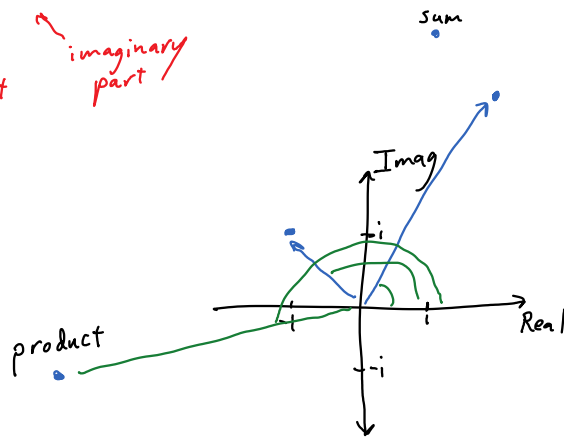
$$\sqrt{-1} = i$$

↑
Imaginary

$$1 + i$$

↑ ↘
real part imaginary part

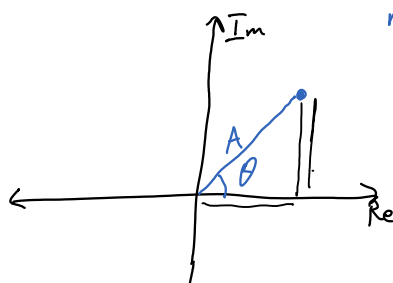
$$(2 + 3i) + (-1 + i) = 1 + 4i$$



Multiplication: FOIL

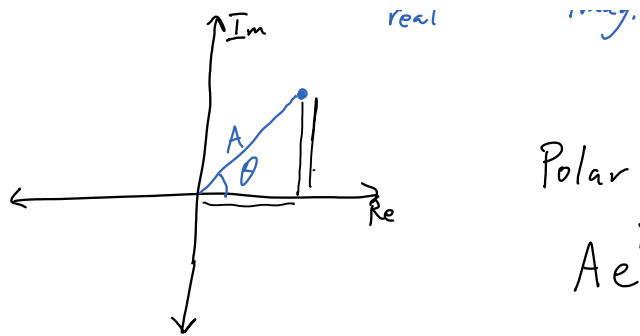
$$(2 + 3i) \cdot (-1 + i) = -2 - 3i + 2i - 3 = -5 - i$$

Euler's Identity: $e^{it} = \cos t + i \sin t$



Polar Coordinates

$$Ae^{i\theta} = A \cos \theta + i A \sin \theta$$



Polar Coordinates

$$Ae^{i\theta} = \underline{A \cos \theta} + i \underline{A \sin \theta}$$

Multiplication: $A_1 e^{i\theta_1} \cdot A_2 e^{i\theta_2} = (A_1 A_2) e^{i(\theta_1 + \theta_2)}$

$$\sqrt[3]{-1} = -1$$

$$-1 = e^{i\pi}$$

$$= e^{i3\pi}$$

$$\sqrt[3]{-1} = e^{i\pi/3}$$

$$\text{or } e^{i\frac{3\pi}{3}} = e^{i\pi} = -1$$

$$\text{or } e^{i\frac{5\pi}{3}}$$

