Robotics 2 – Final Review

Kinematics – week 6

What is forward and inverse kinematics? What variables are you given in each ?

Calculate X/Y given angles and link lengths (you must know the two link equation for Cartesian coordinates robot arm

Robot Cell Layout, Motors– Week 8

Learn and be able to describe and identify aspects of the following robot work cell layouts: robot- centered, in-line (also the 3 types of part transport systems), mobile

Work Cell Control – learn what is does: What is sequence control, operator interface, safety monitoring

What can an input interlock do?

Slew Motion and Limited Sequence

Gears and Ratios, Sensors– Week 9

What is the driver, follower, calculate great ratios of compound gearing mechanisms

How do we increase speed or torque

What do worm, bevel and idler gears do

Three power systems in robotics: electric, hydraulic, pneumatic

Pulleys/belts/gears – do they change direction? Do gears change direction?

Know at least three sensors used in industrial robots

Computer and Machine Vision – Week 10

Learn about the techniques used in machine vision recognition:

-Edge Detection
-Shape Detection and Pattern Recognition
-Middle Mass and Blob Detection
-Pixel Classification
There are two main types cameras – CMOS and CCD
Kalman Filtering used in vision – what is it?

How is face detection calculated?