



# Autonomous Robotics Camp

**Dates:** Monday, July 7th ~ Friday, July 11<sup>th</sup>, 2008

**Time:** 9 am – 4 pm

**Class Size:** Max. 25, Min. 10

**Location:** Lawrence Technological University, Southfield

**Instructor:**

Dr. CJ Chung (Associate professor of Computer Science,  
Founder and Director of Robofest, chung@ltu.edu)

## Objectives

- To learn basic concepts in autonomous robotics, control theories, image processing and computer vision
- To learn object-oriented Java programming language using Eclipse

## Program Contents

1. Construct/assemble Lawrence Tech's laptop robot, L2Bot with a webcam.
2. Robotics 101, robot navigation, and robot control theories
3. Introduction to image processing and computer vision
4. Introduction to Java Programming with Eclipse IDE
5. Introduction to data structures (arrays and 2D array of objects)
6. Introduction to object-oriented Java programming language
7. Java GUI programming
8. Introduction to JMF and how to use USB Webcams with Java
9. Introduction to javax.comm API and how to control motors with Java through serial port
10. Class Competitions; winners will win prizes

## Pre-requisites (Eligibility)

- High school students who are interested in majoring in Computer Science and Engineering
- Knowledge and practical experience with Windows Operating Systems and some DOS
- Some knowledge of a programming language such as C, NQC, IC, PBasic, C++, VB, Python, JavaScript, RCX code, RoboLab, or Java

## Benefits

- Students will be able to study for Computer Science AP exam in Java
- Students will be able to participate in Robot Competitions
- Students will be able to develop various computer vision applications

*Educators have found that teaching with robots provides a new and exciting way to interest and motivate their students. Robots are finding their way into the classroom to help teach science, math, mechanics, teamwork and even management skills.*