Course Introduction
Who am I: Fuxin Li

Oregon State University
Assistant Professor 2015-now

University of Bonn
Postdoc 2008-2010

Georgia Institute of Technology
Postdoc 2011-2012
Research Faculty 2012-2015

Chinese Academy of Sciences
Ph.D. 2009

Zhejiang University
BS 2001
Research Area: Artificial Intelligence
Research Focus

Semantic Segmentation

Video Segmentation

Action Localization

Diving
Golf Swing
Kicking
Lifting
Riding Horse
Running
Skateboarding
Swing-Bench
Swing-Side
Walking
Research Focus

Deep Learning

224 x 224

224 x 224

112 x 112

56 x 56

28 x 28

14 x 14

7 x 7

Airplane   Dog   Car   ...  SUV   Minivan   Sign   Pole  ...

image

conv-64

conv-64

maxpool

conv-128

conv-128

maxpool

conv-256

conv-256

maxpool

conv-512

conv-512

maxpool

conv-512

conv-512

maxpool

FC-4096

FC-4096

FC-1000

softmax
Class Description

• General-purpose data structures and algorithms
• Topics:
  – managing complexity,
  – lists,
  – queues,
  – trees,
  – heaps,
  – hash tables,
  – graphs.
Class Description

• Prerequisites:
  – CS 162
  – MATH 231
  – Basic programming skills
  – Some prior experience with Unix
Why study data structures?

Fundamental in program design.

Design efficient programs!

You don’t want to write a program that takes forever to run and occupies all the memory..

Nor does any company want this (interview questions)
Why study data structures

• Simplify programming
  – Many structures are common and well-studied
  – Knowing those saves a lot of time
  – As well as debugging effort
Example

- The search problem:
  - How fast can we do it?
  - What if we need to:
    - Update the list very often
    - Search many times
• Prerequisites:
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  – MATH 231
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Awareness

• Awareness when programming:
  – How long will my program take to run?
  – How much memory will it take?
  – Can I design it to be more efficient?
  – How much more efficient?
  – What does it take to make it more efficient?
Class Information

- Instructor: Dr. Fuxin Li
- Office: 2077 KEC
- Office hours: Mon 3-5?
- Textbook (required)
  - Dr. Budd’s Online Textbook
- Reference Book (Highly recommended)
  - C Pocket Reference
- Course Website:
  http://classes.engr.oregonstate.edu/fall2010/eecs/cs261
Structure of the Course

- Weekly Reading
- Lectures
- Worksheets in Class
- 7 Assignments
- 1 Midterm
- 1 Final Exam
- Weekly Recitations

Final Grade Breakdown
- 10% Recitation Participation
- 30% Assignments
- 30% Midterm
- 30% Final Exam
Assignment Grading

• Assignments will be graded via in person demos with a TA

• We will have procedures for signing up for demo times.

• If you don’t write your own code, it is almost always going to be obvious at the demo . . . . .
Program Development

• You may use *any development environment* to write your code
• We will write our code in ‘C’ with the C99 standard
• I *highly* recommend that you become very familiar with a debugger and debugging strategies
  – Variables view
  – Expressions
  – Step over, into, out
• All assignments must compile (using gcc) and execute in the linux environment on flip.engr.oregonstate.edu
  – First recitation will exercise this
Website Walkthrough...
Preparation and Attendance

- Regularly attend class

- If you miss a class, you are still responsible for learning the material covered during that class.

- Do not expect a private tutorial if you skip lectures and/or recitations.
Conduct

• Be on time

• Mute cell phones

• You are encouraged to ask questions
Academic Honesty -- Homework

• Honesty:
  – Absolutely essential for learning to occur
  – Forms the foundation of your professional integrity

• Ok
  Discuss concepts, general approaches, bugs
Collaboration

• You are expected to do your own work!
• OK to talk about general approaches and strategies with other students
• Do not simply let someone else tell you how to solve the problem
• Do not let someone else copy your work
Makeup Policy for the Exams

• Contact the instructor at least 5 days in advance to arrange for an alternate date/time
• When the student is disabled, check http://ds.oregonstate.edu/
• No makeup for students who miss a midterm, or final exam without an excused absence