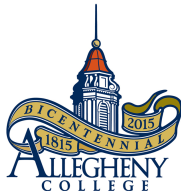# CMPSC 112
Introduction and Course Overview

Dr. Aravind Mohan

Allegheny College

August 29, 2017

About the Instructor

- **August 2017 - present:** Assistant Professor at Allegheny College Computer Science Department
- **August 2011 - May 2017:** Ph.D. from Wayne State University, Big Data and Cloud Computing, advised by Dr. Shiyong Lu
- **Dissertation:** Improving Usability and Scalability of Big Data Workflows in the Cloud
- **May 2010 - August 2011:** Lead Software Engineer at Union Bank Of California, Monterey Park, CA
- **June 2008 - May 2010:** Software Engineer at Kaiser Permanente, Honolulu, HI
- **June 2007 - June 2008:** Software Engineer Intern at Marathon Oil Corporation, Findlay, Ohio

Instructor's research interests

- **Main interests:** big data management, with the focus on:
  1. developing scalable and usable tools and models to address the five V challenges of big data leveraging the cloud.
  2. building QoS driven cloud based big data workflow optimization techniques.
- **General interests:** data science, big data, cyber security, databases, web information retrieval, services computing, provenance and Internet of Things.

About You

Tell us something about you, so we can get to know each other. In one minute, discuss the following:

- Your Name
- Your Major
- Familiarity with Java:
    - Taken a class
    - Used for one project
    - Used extensively
    - Favorite programming language
- What do you expect to learn from this class?

The Important Stuff

- Lecture: Tuesday and Thursday, 9:30 am –10:45 am at Alden 109
- Lab: Thursday, 1:30 pm –3:20 pm at Alden 109
- Prerequisites: Computer Science 111, or permission of instructor.
- Office Hours:
  - Monday, Wednesday, and Friday: 9:30 am –11:00 am (15 minute time slots)
  - Tuesday: 11:00 am –12:00 noon (15 minute time slots)
  - Thursday: 11:00 am –11:30 am (15 minute time slots)
- Email: amohan@allegheny.edu
- Website: http://www.cs.allegheny.edu/sites/amohan/

Required Textbook

Data Structures Algorithms in Java Michael T. Goodrich, Roberto
Tamassia, and Michael H. Goldwasser 6th edition ISBN 0470383267
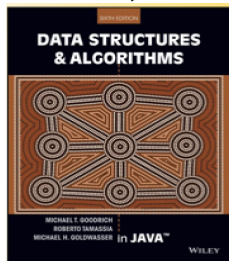
Grading!

- Exams 1-2 (15% each)
- Final Exam (20%)
- Weekly Labs (20% total)
- Weekly Quizzes (10% total)
- Course Project (10%)
- Attendance (5%)
- Participation (5%)

Late Policy

- If its late, you get penalized
    1. 20% up to one week
    2. 100% after one week
- If you cant get to class, tell me one week in advance, unless you are sick, in which case please get me documentation.
- Dont schedule vacations during exams!

What will I Learn?

1. The ideas behind object-oriented code, both in structure and in design.
2. The implementation of a number of data structures, including Stacks, Queues, Strings, Trees, Graphs, and Hashtables.
3. Understand the uses of each of these data structures as they relate to algorithm design.
4. Analyze the performance of some of these data structures.
5. Gain exposure to fundamental code structures, such as recursion, searching, and sorting.

Lecture Structure

- Lectures will consist of two primary formats: standard and Q&A lectures
- **Standard Lectures:** A standard session will have the following format:
    - A 5-minute Mastery Quiz, with questions reviewing the material from the previous lecture, only graded for Attendance credit
    - 40 minutes of lecture content, which will include multiple segments of (1) listening to lectures, (2) exploring and enhancing provided code, (3) attempting practice problems, and/or (4) interacting with non-code sample material
    - A 5-minute Review Form, to help me understand how you have followed the course material for the current session and if any of the content was unclear.

- **Q&A Lectures:** A Q&A lecture session will have the following format:
  - A 5-minute Mastery Quiz, as above
  - A dedicated class session to answering questions that have been submitted in advance of the scheduled lecture (which may include more than 40 minutes of content)
  - A 5-minute Review Form, to see if there are any followup questions, or if any of the additional explanations were unclear

Class Structure

- Week 1 = Quick 111 Review
- Weeks 2-3 = OOP Design / UML
- Weeks 4-5 = Arrays / Lists / Recursion
- Week 6 = Analysis / Performance
- Weeks 7-8 = Stacks / Queues
- Week 9 = ArrayLists
- Weeks 10-11 = Trees / Heaps / Graphs
- Weeks 12-13 = Hashtables / Maps
- Weeks 14-15 = Searching / Sorting

Important Dates

- **Exam 1:** will be on October 3
- **Exam 2:** will be on November 9
- **Final Exam:** will be on December 14, 2017 at 7:00 pm

Department of Computer Science Honor Code Policy

It is recognized that an important part of the learning process in any course, and particularly in computer science, derives from thoughtful discussions with teachers, student assistants, and follow students. Such dialogue is encouraged. However, it is necessary to distinguish carefully between the student who discusses the principles underlying a problem with others, and the student who produces assignments that are identical to, or merely variations on, someone else work. It will therefore be understood that all assignments submitted to faculty of the Department of Computer Science are to be the original work of the student submitting the assignment, and should be signed in accordance with the provisions of the Honor Code. Appropriate action will be taken when assignments give evidence that they were derived from the work of others.

Questions