CS 520/620

Instructor

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Who is this guy?
The way to UMass
The way to UMass
The way to UMass
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The way to UMass
What is Software Engineering?
What is Software Engineering?
What is Software Engineering?
What is Software Engineering?
Introduction

What is Software Engineering?

All of the above and much more. It’s more than just writing code!
What is Software Engineering?

More than just programming

➤ The complete process of designing and developing a software system.

➤ From requirements/specification to building, running, and maintaining a system that meets the requirements.

➤ Some Software Engineering tasks, covered this semester:
  ▶ Modelling a software system.
  ▶ Designing a software system.
  ▶ Testing a software system.
Why is Software Engineering important?
Software is everywhere ...
Software is everywhere ... and buggy
A personal anecdote

Version control
system

ssh

\texttt{LaTeX}

\texttt{git push}
A personal anecdote

Version control system

\texttt{\LaTeX}

\texttt{git push}

ssh
A personal anecdote

Version control system

Well designed and implemented? Sufficiently tested?
Software development: ad-hoc or systematic?

Pros: Ad-hoc

- No formal process
- Easy, quick, and flexible

“Brain to terminal”

Cons: Ad-hoc

- Might lack important tasks such as design or testing.
- Doesn’t scale to multiple developers.
- How to measure effort and progress?
Summary: Software Engineering

What is Software Engineering?
- Much more than just writing code!
- The complete process of designing and developing a software system that meets its requirements/specification.
- ...

Why is Software Engineering important?
- Decomposes a complex engineering problem.
- Organizes processes and effort.
- Improves software reliability.
- Improves developer productivity.
- ...

Logistics and Expectations
Logistics

- Tuesday and Thursday 10:00am–11:15am.
- Goessmann Lab Addition 152.
- Lectures, lab session, and presentations.
- Submission of assignments via Moodle: http://moodle.umass.edu
- Course material, assignments, etc. on web site.

http://people.cs.umass.edu/~rjust/courses/2016Spring/CS520.620
Grading

Considered for evaluation:

- Homework,
- Midterm,
- (Research) projects,
- Paper presentations,
- Participation.

620 students:

- Research term paper.
Expectations

- Programming experience.
- Familiarity with one OO programming language (Java, C++, ...).
- Reading and presenting research papers.
- 620 students: research project.
  - Developing a novel technique or
  - conducting an empirical study.
Topics covered this semester

- Software modelling and the Unified Modelling Language (UML).
- Software design and architecture.
- Software testing.
- Experimental Software Engineering.