CptS 317: Automata and Formal Languages
About me

• **Name:** Assefaw Gebremedhin
  (pronounced “Asse-faw” “Geb-re-me-d-hin”)

• **Office:** EME B43

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• **Webpage:** www.eecs.wsu.edu/~assefaw

• **Research interests:** Data science, graph algorithms, high performance computing, bioinformatics

• **Lab:** Scalable Algorithms for Data Science (SCADS) Laboratory  (https://scads.eecs.wsu.edu)

• **Teaching at WSU:**
  - CptS 475/575: Data Science (Fall 2015--2019)
  - CptS 591: Elements of Network Science (Spring 2015--2019)
  - CptS/STAT 424: Data Analytics Capstone (Spring 2019)

• **CptS 317 Spring 2020:**
  - Lectures: MWF, 10:10--11, SPRK G0010
  - Office Hours: Wed. 1:30pm—2:30pm (or by appointment)
  - Teaching Assistant: James Halvorsen
  - Email: james.halvorsen@wsu.edu
  - Office hours: TBD
Course websites

• **Public course site:** [https://scads.eecs.wsu.edu/index.php/automata-s2020/](https://scads.eecs.wsu.edu/index.php/automata-s2020/)
  • Syllabus
  • Overview of schedule (updated after every lecture)
  • Resources

• **OSBLE+:** [https://plus.osble.org](https://plus.osble.org)
  • Lecture notes
  • Homeworks
  • Announcements and posts
  • Discussions

• Currently:
  • 77 added users (no further action)
  • 6 whitelisted (be sure to respond to invitation ASAP)
  • If you are not added or whitelisted, make sure to create an account on OSBLE+ by going to [https://plus.osble.org](https://plus.osble.org) and then Join the course CptS 317 Spring 2020
Course Objectives

• Introduce concepts in automata theory and theory of computation

• Identify different formal language classes and their relationships

• Design grammars and recognizers for different formal languages

• Prove or disprove theorems in automata theory using its properties

• Determine the decidability and intractability of computational problems
Course Organization

• Very broadly, the course will contain three parts:
  • Part I) Regular languages
  • Part II) Context-free languages
  • Part III) Turing machines and decidability
Pre-requisites

- CptS 122/132: Data Structures
- Math 216: Discrete Structures
Textbook

- Introduction to the Theory of Computation, 3rd Edition
  - By Michael Sipser
- The above is the official textbook
- The next is an alternative, but it is out of print
- Introduction to Automata Theory, Languages and Computation, 3rd Ed.
  - By J.E. Hopcroft, R. Motwani, J.D. Ullman

Primary

Alternative
(Currently out of print)
OSBLE site of the course (revisited)

• The site will be used for posting
  • Syllabus
  • Lecture notes
  • Homeworks
  • Course related resources
  • Announcements

• The site will also be used for
  • Discussions (dashboard)
  • Communicating with the instructor (through its email functionality)

• Make sure you are added to the course by end of first week of classes
How to get in touch with the instructor and the TA

- **OSBLE** (email, dashboard)

- **Office hours**
  - Weekly once
  - Preferred way to meet one-on-one
  - No need for prior appointment if meeting during office hour

- In addition, the instructor will be available to meet outside of office hours by appointment
Grading

- 8 homeworks (60%) – best 7 out of 8 will be used toward final grade
- 2 midterms (20%)
- 1 final exam (20%)

Final letter grade based on ranges (see syllabus)
Homework submission policy

• Hardcopy to be submitted in class on the due date
  • Early submission allowed
• No late submissions
• Extensions *may be* permitted under extraordinary circumstances
  • Contact instructor at least 1 week prior
• Home works will be posted on the Osblle site of the course
Homework policy

• All homework must be done individually

• Cheating:
  • Helping others, getting help, looking up website for solution, etc
  • Students caught cheating will be awarded an F grade, and will be subjected to the WSU academic dishonesty policy
  • If something is not clear, on what constitutes cheating and what does not, please consult the instructor in advance
Exam policy

• 2 midterms and 1 final exam
• Closed book, closed notes, comprehensive

• Make-ups will be rare and only under extraordinary circumstances
• Seek prior permission from instructor (at least two weeks in advance)
Course schedule

• The course website (the public) will maintain an overview of the schedule. It will be populated as lectures proceed (currently it is empty)

• Lecture notes and homeworks will be posted on the Osble page

• Exam dates will be announced on Osble and will be indicated on the course schedule page
Lecture basics

• Classes will involve both Slides + Board (to roughly equal degree)
• Lecture slides will be posted on Osble
• However, scribes from class may not be made available
• So, take your own notes in class (can’t stress this enough)

• Laptops and smartphones preferred not to be used in class (I know you like them, and they are really great, but “paper-and-pencil” works better for this class)
In conclusion…

- Glad you made it safe to class on a snowy day
- Some of your friends are delayed on their travel back
- Pass the syllabus and this intro slides to them
- See you on Wed, Jan 15