

EECS 498 System Design of a Search Engine

Winter 2026

Lecture 25: Review and reflections

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agenda

1. details
2. final exam review
3. reflections
4. commencement address

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remaining schedule

1. Today: Review for the final
2. Thu April 17, Fri April 18, Tue April 21: Presentations
3. Tues Apr 21: Peer evals, final reports and project archive due
4. Wed April 22 through Wed April 29: Team debriefs
5. Wed April 29 4:00pm: Optional final exam, Dow 1013 and 1206.

details

Fill out your column of the search engine comparison spreadsheet at <https://tinyurl.com/W26SearchEngines>

presentation order

Thursday April 16

Section 005 12:00 to 1:20

- 1.*ClosedAI
- 2.*Cache Me If You Can

Section -012 1:30 to 2:50

- 1.The Avengers
- 2.The Ranking Hat

Friday April 17

Section -012 1:30 to 3:20

- 1.Seamus the Search Engine
- 2.Bing Chilling

3.*404 Found

Section -005 3:30 to 5:20

- 1.Check Engine Light
- 2.The Most Most Wanted
- 3.*I'm Feeling Lucky

Tuesday April 21

Section 005 12:00 to 1:20

- 1.Browser Juniors
- 2.OSeans 7

Section -012 1:30 to 2:50

- 1.Twoogle
- 2.*Crawl Me Maybe?

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W25 final

Posted to Canvas in the Files > Exams > Midterm folder:

[EECS498W25 Final Exam Solution.pdf](#)

Your exam will be similar, 25 TF or MC + 10 short answer.

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I hope you enjoyed the course and that you may have better outcomes because our lives intersected.

outcomes

The hoped-for outcome was that you learned how to tackle a large system design project on a startup team of 6 or 7.

I wanted your experience to be like what I what I experienced at Microsoft (or at least, the good parts.)

I hope it helped you think about what kind of career you'd like.

I hope it can help you get jobs.

observations

To get really good at anything, takes two things.

1. You must be able to relentlessly criticize your own work, looking for ways it could be improved.
2. You need practice.

You can keep getting better all your life.

observations

No one should spend their life in a career they don't love.

It's important to take pride in your work.

Your work must provide satisfaction.

We all have intellectual and social needs for purpose.

observations

We began our discussion with an observation that digital electronics had changed the world from the one even your parents experienced.

if you are 20 in 2024

TV has never had snow.

You could listen to any song
you want anytime you want.

Phones have always had apps.

Cameras have never used film.

You can buy anything online.

Everyone has always had
computers.

Music has never has hiss.

But none of these statements
are true for your parents.

what made this possible

Positional numbers

Digital circuits

Microelectronics

Three key technologies
made this possible.

what made this possible

Positional numbers

Digital circuits

Microelectronics

Positional number systems, where each position is a power of the base, were invented by the Babylonians, making arithmetic simple.

(Consider the alternative of doing addition in Roman numerals.)

what made this possible

Positional numbers

Digital circuits

Microelectronics

Digital circuits with a *noise margin* that allows them to give the correct output, even if there's some noise on the input.

what made this possible

Positional numbers

Digital circuits

Microelectronics

We can now throw billions of digital circuits at a problem.

You can have as many as you like, they take almost no space, and you can power them with a small battery.

But the world is not done changing.

then we talked code

We talked the OS and then about how a search engine works.

You built an HTML parser, programs to read web pages and serve them up, and how to memory map a hash table.

what I did better this time

We got tee shirts. (Yippee!)

I updated a number of autograded assignments before the class started, including Utf8 and Multithreaded file operations.

I finally explained how to do a form plugin to LinuxTinyServer using GET.

I got my robots.txt assignment written.

what I'll do better next time
(assuming there is one)

I always learn something.

I'd like to update and improve the Bloom filter and expression parser assignments.

I'm thinking of possibly adding a constraint solver assignment.

thank you

I wish you all great success in life and I hope some of what we talked about here will be useful.

Thank you for being my students.

Please take the survey at
<https://umich.bluera.com/umich/>
before April 22.

University of Michigan - Evaluation

umich.bluera.com/umich/fg-eng.aspx?pid=829de48e-1d7b-436e-a20c-c532b920ff46&sid=93c66a90fa4b7572e1ee749...

Evaluation for EECS 498-005: Special Topics

Save

Please answer the following questions about the course EECS 498-005: Special Topics:

This course advanced my understanding of the subject matter.(Q1631)

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree

☐ Strongly Disagree ☐ N/A

My interest in the subject has increased because of this course.(Q1632)

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree

☐ Strongly Disagree ☐ N/A

I knew what was expected of me in this course.(Q1633)

☐ Almost Always ☐ Frequently ☐ Sometimes ☐ Occasionally ☐ Hardly Ever

Maybe say something nice at
ratemyprofessors.com.

(But you'll have to add a 498 class.)

The screenshot shows the website ratemyprofessors.com with the profile of Nicole Hamilton. The browser's address bar shows the URL 'ratemyprofessors.com/professor/2283397'. The page features a navigation bar with 'RMP', 'Professors', and search fields for 'Professor name' and 'Your school'. The main content area displays a large '4.7 / 5' rating, 'Overall Quality Based on 31 ratings', and the name 'Nicole Hamilton'. Below this, it states 'Professor in the Computer Science department at University of Michigan'. There are two metrics: '88% Would take again' and '3.6 Level of Difficulty'. A 'Rate ->' button and a 'Compare' button are visible. To the right, a 'Rating Distribution' bar chart shows the following data:

Rating	Count
Awesome 5	26
Great 4	2
Good 3	2
OK 2	1
Awful 1	0

Below the chart is a 'Similar Professors' section with a table:

Professor	Rating
Greg	5.00
Raed	5.00
Saqib	5.00

At the bottom, there is a 'GoDaddy' advertisement banner that says 'There's something incredible in your cart.' and a 'CHECKOUT NOW' button. On the right side of the page, there is an advertisement for AT&T showing a woman holding a phone, with text: 'Add fiber to get 15 lines of unlimited wireless and eligible home internet for \$99/mo. Ring, Ring, AutoPay. 8 payphones toll. Learn more.' and a small disclaimer at the bottom.

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Steve Jobs commencement address at Stanford in 2005.

<https://www.youtube.com/watch?v=UF8uR6Z6KLc>