Lightning Talk:
Computer Science Engineering

Stephen Wu

About

Stephen Wu

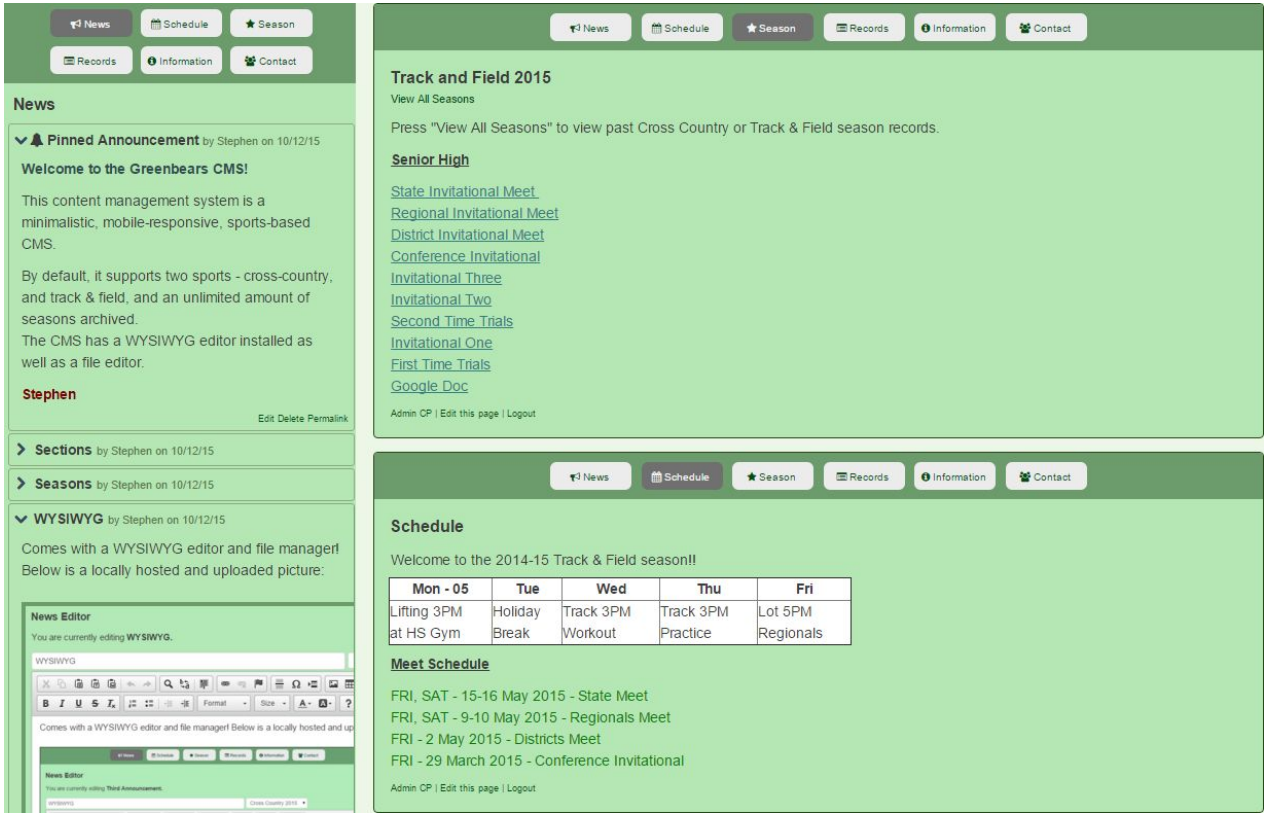
- 2nd Year Computer Science Engineering Major, Design Minor
- Involvements:
  - **STEM Exploration & Engagement Scholars Consultant**
  - **Triangle Fraternity Secretary & Philanthropy Chair**
  - **Communication Assistant @ Honors & Scholars Center**
  - Running Club, HackOHI/O Attendee, Intramural Sports
  - Interests: music & piano improv, running, design, programming



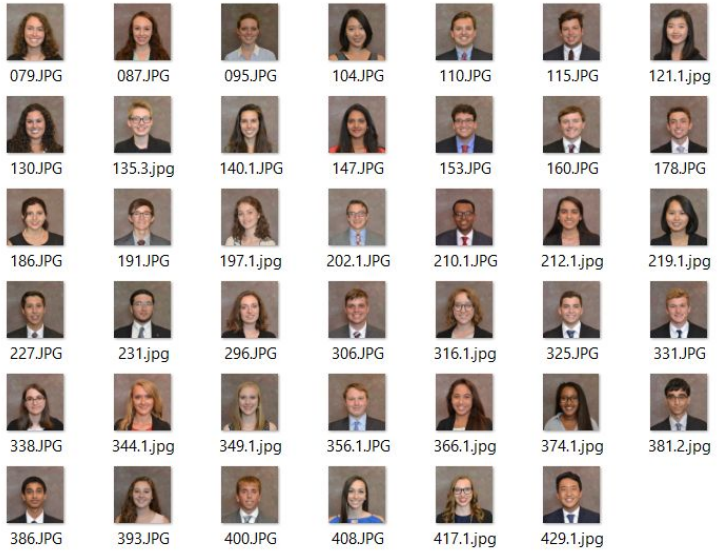
Why CSE?

- Flexibility
  - Whether you're into math, physics, graphics, statistics, finance, design, startups, games
  - Can be remote or on-site, with a group of any size, consulting or singular
- Depth & Breadth
  - Artificial Intelligence, Computer Graphics, Game Design, Software Engineering, Cyber Security, Data Analytics, Computer Systems, Web Design, and tons more subfields
  - Always more to learn, incredibly expansive field
- Accessability
  - Online resources everywhere; learn no matter your age or background
- Demand
  - "There are currently over 500,000 open computing jobs, in every sector, from manufacturing to banking, from agriculture to healthcare, but only 50,000 computer science graduates a year."


Beginnings - 2010



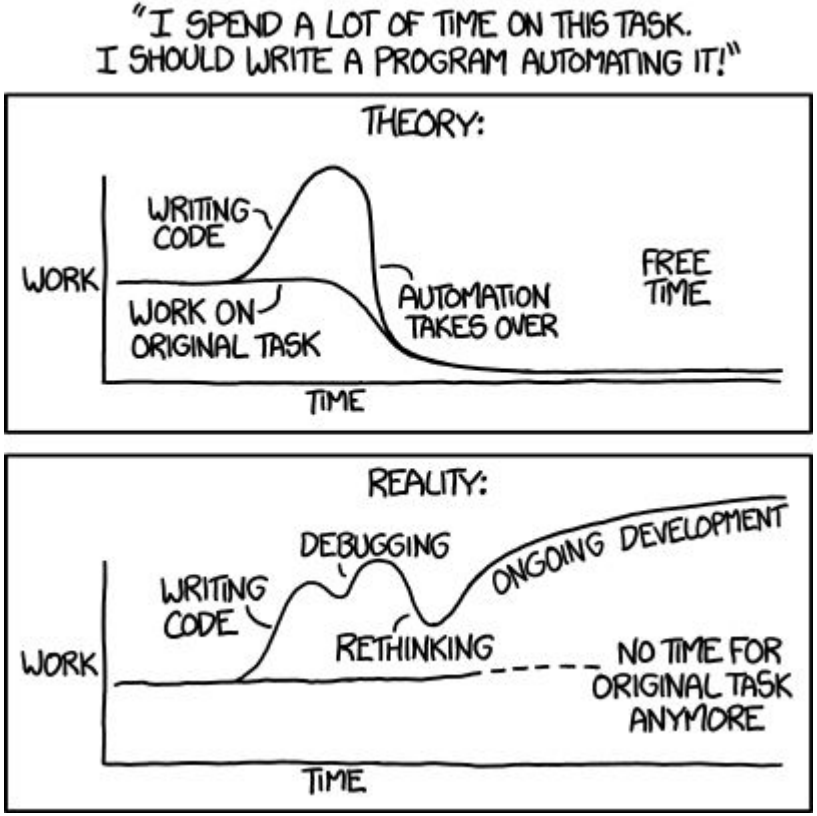
Internet Relay Chat Bots & Websites — Greenbears CMS



Workplace Automation

```python
# Batch crop
for photo in os.listdir(path_in):
    print("---------- " + photo + " ----------")
    if i < 100: # Limit at 100 just in case
        dataFile = open(path_in + '/' + photo, 'rb')
        res = requests.post(url, data=dataFile, headers={'User-Agent' : 'py'})
        if res.status_code == 200:
            print(res.content)
            d = json.loads(res.content)
            token = d["token"]
            if (len(d["faces"]) > 0):
                for face in range(0,len(d["faces"])): # Loop through all faces found
                    # Create new coordinates based on face
                    head_height = d["faces"][face]["height"] * scale
                    head_width = d["faces"][face]["width"] * scale
                    head_x = d["faces"][face]["x"] + (d["faces"][face]["width"] - head_width) * 0.5
                    head_y = d["faces"][face]["y"] + (d["faces"][face]["height"] - head_height) * 0.5
                    # Establish url with new coordinates
                    url2 = base + str(token) + '/image.jpg?x=' + str(head_x) + '&y=' + str(head_y) + '&width=' + str(head_width) + '&height=' + str(head_height)
                    print(url2)
                    # Add number for additional faces
                    split = os.path.splitext(os.path.basename(photo))
                    add = '' if face == 0 else '.' + str(face)
                    photo_out = split[0] + add + split[1]
                    # Write to file
                    with open(path_out + "/" + photo_out, 'wb') as f:
                        urllib.urlretrieve(url2, path_out + '/' + photo_out)
            else: # No faces found, resort to default params
                url2 = base + str(token) + '/image.jpg?' + backup_params
                urllib.urlretrieve(url2, path_out + '/' + photo)
        else: # Print error
            print ('Error: ' + res.status_code)
    i = i + 1
```

python™



Automation, XKCD

Number of Photos to Crop: 68

Time spent on learning Python & coding: 4 hours
Time spent fixing certain photos: 1 hour

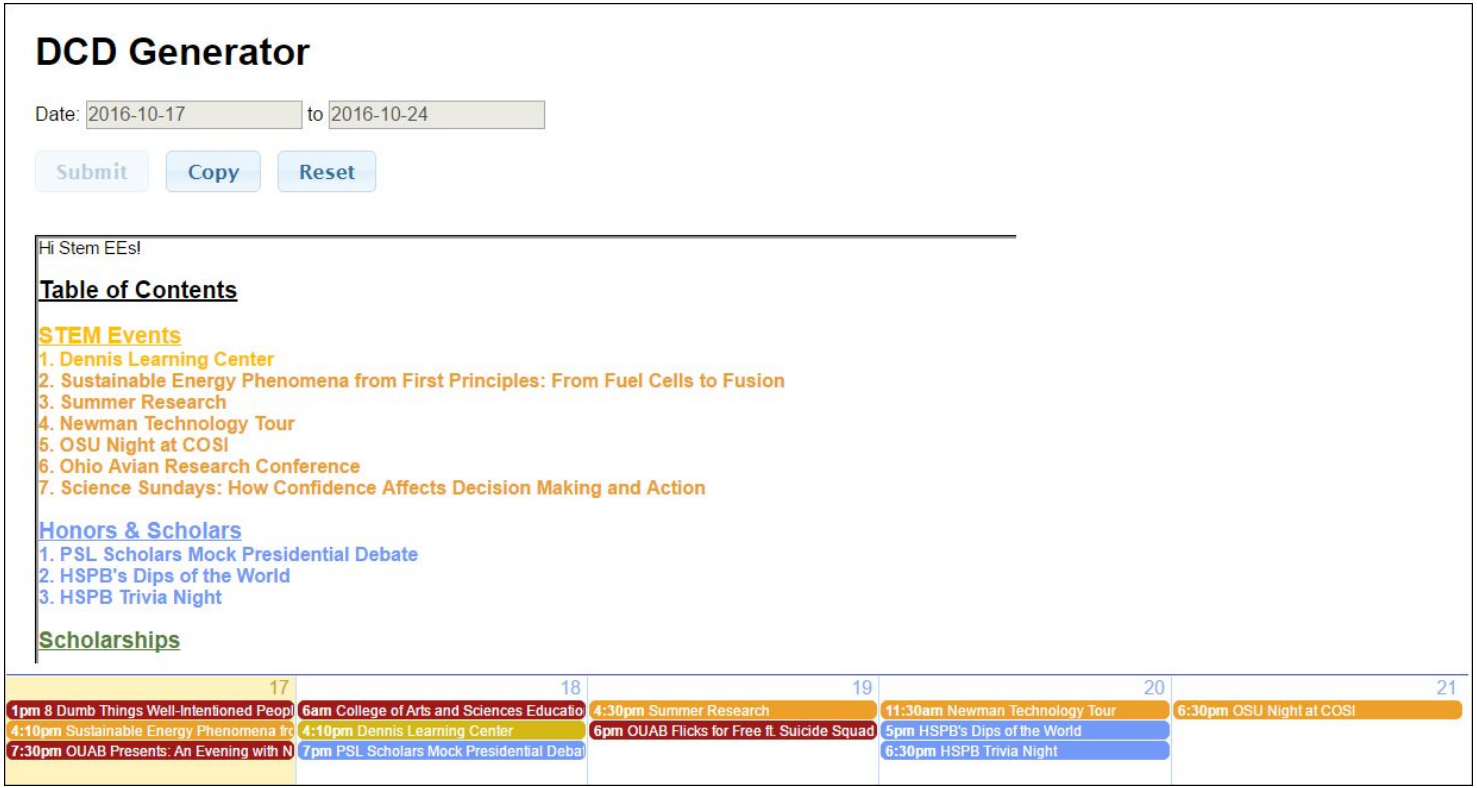
Time it would've taken to crop all photos anyway: 2 hours

Although, if implemented:
Number of Photos per Year to Crop: 120+
Time it might save in the future: 4 hours/year

If there were 1000 photos to crop a year, savings at $10/hr could be $333/year from just these 50 lines of code.

Robots will "'cause unemployment and we need to prepare for it" - Mark Cuban, 2017

"There is a pretty good chance we end up with a universal basic income, or something like that, due to automation…People will have time to do other things, more complex things, more interesting things...Certainly more leisure time." - Elon Musk, 2016



STEM Scholars Weekly Email Digest Generator - 2016 (Demo)

MIDI.js

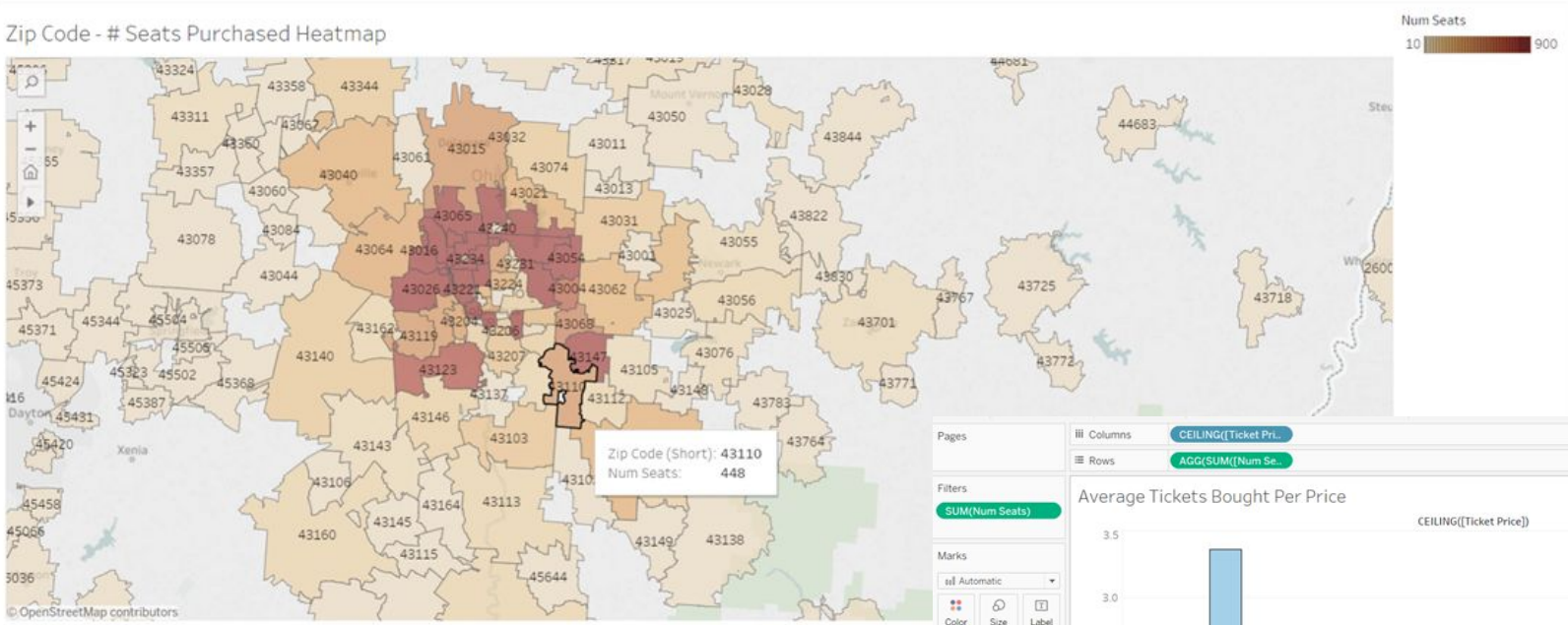
jQuery

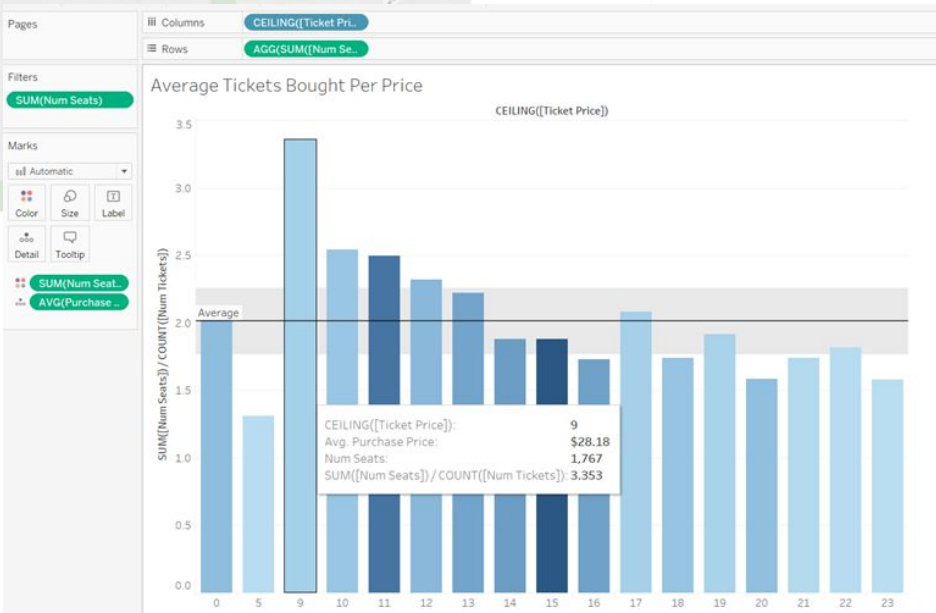
jQuery

HTML 5

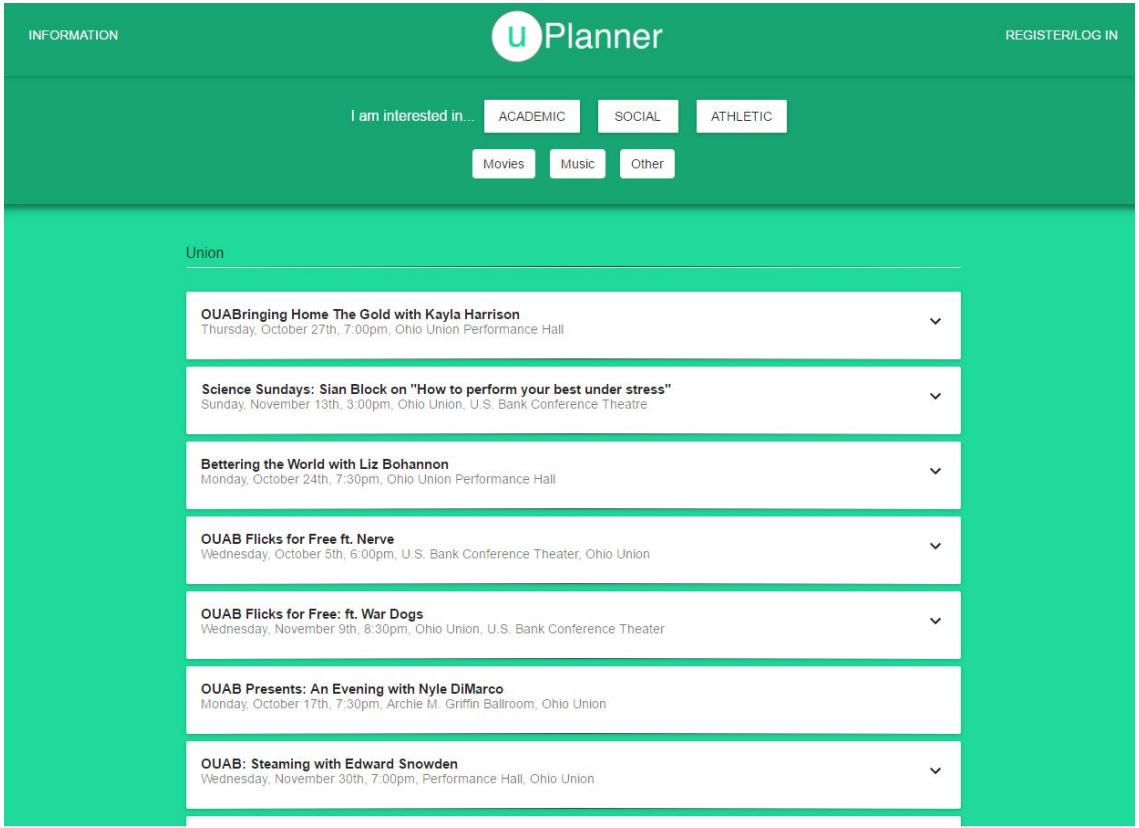
CSS 3

Starry Night Sequencer - MIDI file visualizer (Demo - Source)

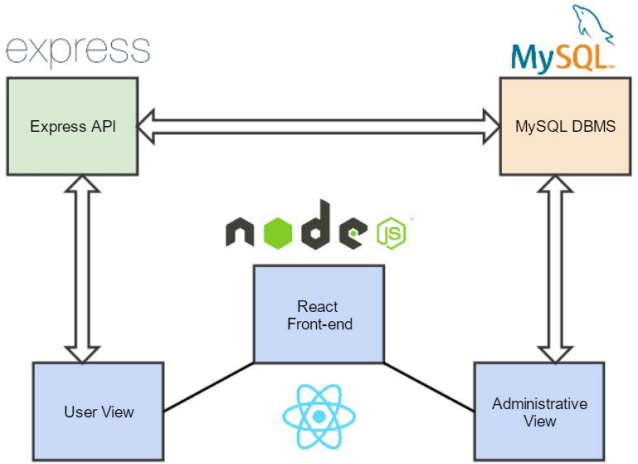




Fisher Data Analytics Research Assistant

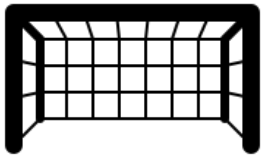


HACK OHIO 2016



UPlanner: curated event digest for universities

Future Goals



1. Maybe get a **M.S.** in Computer Science Engineering
2. Work for a company like **KhanAcademy** that improves resources like education for others
3. **Travel the world** while working a remote job
4. Help work on a **high school CSE curriculum**

Suggestions

- **Just do it** - if you want to make something, learn how to make it
  - Tons of resources online: MOOCs (Massive open online courses) like Udacity, KhanAcademy, Coursera, etc. — noexcuselist.com
- **Get involved** - attend hackathons, join clubs, rush Triangle
- Don’t leave college with nothing on your resume — make the most of your experience while you are here :)
  - Make use of your resources, including your STEM mentors, faculty, professors, etc.

Suggestions

- **Explore programming!** (even if not in CSE)
  - Tons of transferrable skills, including an **optimization mindset**
  - Basic knowledge is necessary for many research roles (Engineering, Physics, Chemistry, etc.)
- Pick up HTML / CSS and make a personal website
  - Helpful for business, marketing, design majors, but also helps you create a portfolio
  - Bootstrap or WordPress is a good place to start, the later is less programming
- If you're interested in big data / data analytics...
  - Read FiveThirtyEight.com
  - Play with datasets, visualizations, and look into R, Tableau, Python scikitLearn / Pandas
  - Take the Udacity: Intro to Data Analysis class

- P.S. check out the STEM EE Shared Drive: go.osu.edu/stemeeshared

Thanks for listening!
Questions?

Feel free to email me at Stephen Wu.2719@osu.edu
This presentation is at go.osu.edu/stemeecsetalk