

February 6, 2025
Assistive Robotics



ENGR110/210

Perspectives in Assistive Technology



Monroe Kennedy III, PhD
Assistant Professor of ME
and by courtesy CS

Questions?



At what age do you consider a person “old”?



2025

- Range = 25 - 80
- Average = 60.7 years
- STD = 14.4
- N = 21

2024

- Average = 57 years
- STD = 18
- N = 19



Top employment choices

2024

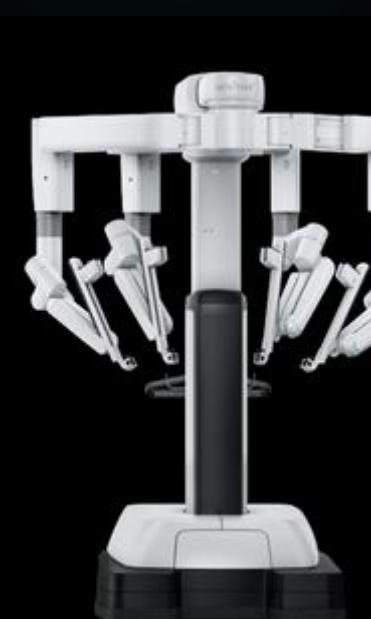
- Lockheed-Martin
- Raytheon
- **Stark Industries**
- Nike
- Google (2)
- NBA
- Spotify
- Apple
- Johnson & Johnson
- Tesla
- Nvidia
- Skky Partners
- Hyundai
- Heirloom



Top employment choices

2025

- Davis Legacy Enterprises
- Apple (6)
- Google (3)
- McKinsey (2)
- Anduril
- NASA-JPL
- Intuitive Surgical
- Specialized
- Self
- Don't know



Stanford President's Quote

- ▶ Stanford University named Jonathan Levin, a decorated economist, as its new president. “We should focus on encouraging students to listen to different perspectives and engage in dialogue,” he said.





ATTENDANCE



- ▶ Inform me if you will be attending an athletic event or will otherwise miss the class session
- ▶ Let me know if you are unable to arrive on time or must leave early
- ▶ Make up missed lectures promptly by reviewing pdf slides, watching YouTube video, and discussing with me
- ▶ Make up missed class sessions - required for students working on team projects



Team Names



- ▶ Hydro Hold - Universal Water Bottle & Phone Holder
- ▶ Radiant Rollers - Enhanced Visibility
- ▶ Paw Patrol - Laptray Artwork Easel
- ▶ IP68 - Rain Shield
- ▶ Simple Stash - Laptop Storage
- ▶ Water Wizards - Water Bottle Opener
- ▶ Water Lilies - Accessible and Inclusive Playground
- ▶ **Seventh Team with No Name** - Accessible and Inclusive Playground
- ▶ Scoop Squad - Poop Management

Students Working on Team Projects



- ▶ **Connect with project partner**
- ▶ “Understand the Problem”
- ▶ Brainstorming
- ▶ Select Design Concept(s)
- ▶ Sketches, low resolution prototypes
- ▶ Prepare for **Mid-Term Presentation** and **Report**
- ▶ Contact me if you have questions about your project direction
- ▶ Meet with me to report on project progress
- ▶ **Team budget = \$200**
- ▶ Submit progress reports and photos
- ▶ **Mid-Term Reports due Mon, Feb 17th**



Students Working on Team Projects

Mid-term Presentations in 7 days!



- ▶ Mid-term presentations will be **7 minutes**
- ▶ Project title, background, problem, aim, design criteria, “understanding the problem” & brainstorming activities, and selected solution, **brief video, low resolution prototypes**
- ▶ **Send Google Docs shared url to me, slides to be run from my laptop**
- ▶ Strive to be professional
- ▶ Include feeling & emotion & enthusiasm
- ▶ Presentation tips on course website
- ▶ Information sent in Week 4 in Review - example presentation video
- ▶ **Bring your laptop to fill out online evaluation form**
- ▶ **Signup Sheet for presentation order during Break**
- ▶ **Video presentation by team members not present**

Presentation Items – 1 of 2



- ▶ Introduction of team and its members
- ▶ Brief abstract
- ▶ Statement of problem
- ▶ Magnitude of problem addressed by this project
- ▶ Discussion of interviews with those who suggested the project and potential users
- ▶ Summary of design criteria
- ▶ Identification of existing solutions and discussion of their limitations
- ▶ Description of brainstormed design concepts

Presentation Items – 2 of 2



- ▶ Analysis of considered design alternatives
- ▶ Description of top selected design concepts, including their technical feasibility, engineering difficulty, estimated cost, user acceptance, safety considerations, etc
- ▶ Design visualizations: photographs, **videos**, sketches, drawings, models, and prototypes
- ▶ Future work and challenges for continuing the project toward fabrication and testing with users
- ▶ Project status - what has been done, what remains
- ▶ Problems encountered, resolved, and pending
- ▶ Plans for the remainder of the quarter

Presentation Evaluation Areas



- ▶ **Presentation & Delivery:** **Presentation:** (What the team presented) - clarity, organization, and completeness of the information presented. **Delivery:** (How the team presented) - professionalism, enthusiasm, conviction, confidence, energy, volume.
- ▶ **Process:** (How the team addressed the problem) - problem information, background research, design concepts brainstormed, prototyped, tested, and evaluated.
- ▶ **Design:** (What the team produced) - creativity, originality, functionality of the design concept & prototypes and the likelihood it will meet the user's challenges.
- ▶ **Overall:** (Overall score) - combined impression of presentation and project effort

Presentation Evaluation Comments



- ▶ What did the team learn, what are your LIKES and WISHES about what they did, and what are your recommendations, suggestions, and advice for the team?

Team Project Presentations



“Student project teams have selected a challenge or problem experienced by individuals with disabilities or older adults and have been working to understand, research, brainstorm, design, fabricate, and test prototype devices or software to meet the identified challenge. Each team will now present their mid-term project progress.”

Sorry, there will not be time for questions.

Students Working on Team Projects

Mid-term Report



- ▶ Mid-term report - 10 to 15 pages of narrative - text and images
- ▶ Include legible sketches and photos
- ▶ Goal: short, concise, well-written, and highly readable report with few grammatical and spelling errors.
- ▶ Report Writing Tips documents **suggested** report organization
- ▶ Information sent in Week 4 in Review - example report
- ▶ **Mid-Term Reports due Mon, Feb 17th**

Monday, February 17th



Mid-term Reports Due

Read Instructions and Tips:

- ▶ [Mid-term Assignment Webpage](#)
- ▶ [Suggested section titles](#)
- ▶ [Report writing tips for each section](#)
 - ▶ [Scanning sketches](#)
 - ▶ [Adding captions](#)
 - ▶ [Adding bibliographic references](#)



Reminder - Work with Diligence



- ▶ Time is your most precious resource
- ▶ Seven days until Mid-term Presentations - Thu, Feb 13th
- ▶ Outline your presentation & report



Upcoming Class Sessions



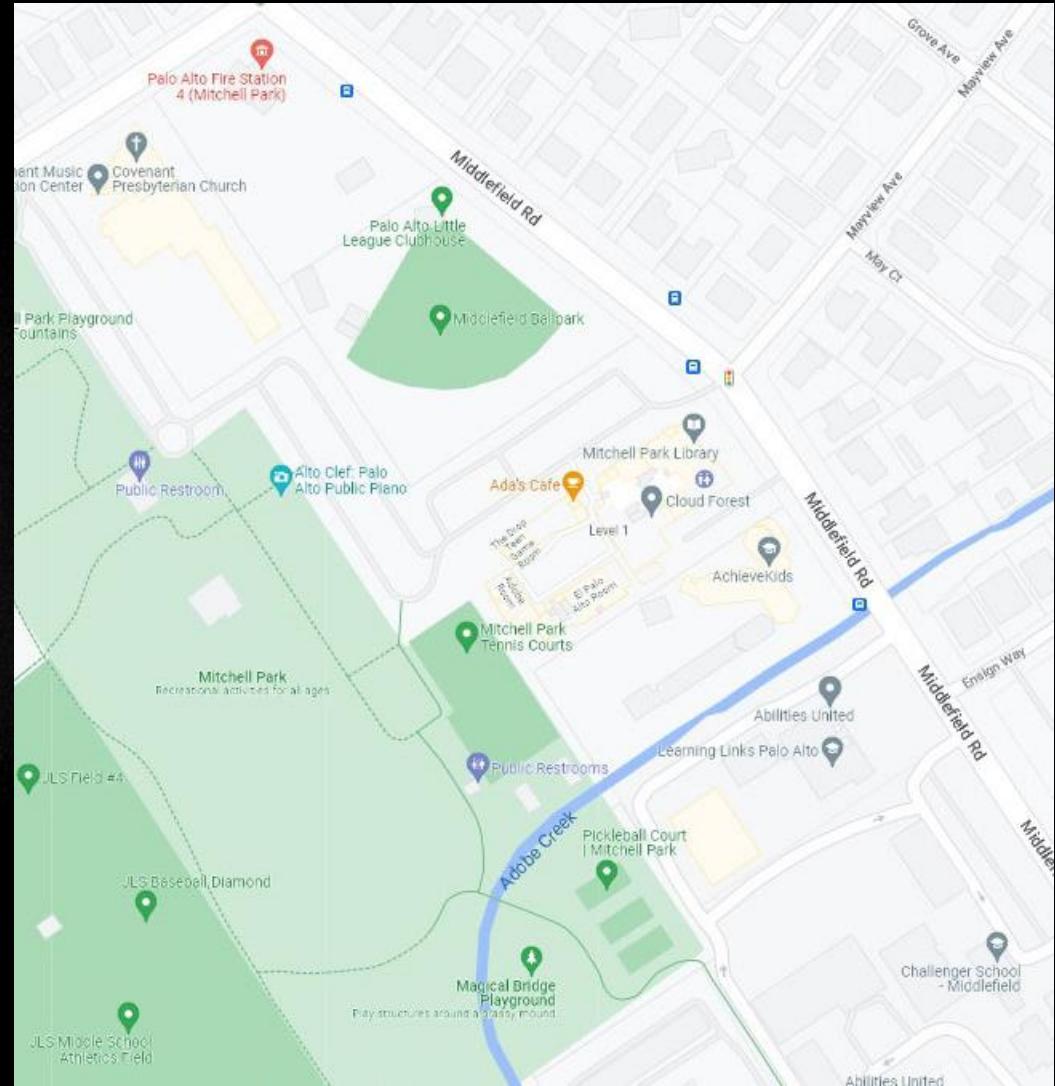
- ▶ Assistive Robotics –
Monroe Kennedy III, PhD – Today
- ▶ Field Trip to the Magical Bridge Playground –
Olenka S. Villarreal – Tue, Feb 11th
Passengers' Signup
- ▶ Mid-term Student Project Presentations –
9 Teams – Thu, Feb 13th
Time Slot Signup



Magical Bridge Playground



- ▶ Palo Alto – Mitchell Park
Middlefield & Charleston
Map url to be sent
Get there by 4:30pm
- ▶ Park in the Mitchell Park Library lot
Walk to nearby MBP
- ▶ Hot cocoa & cookies
Introduction by Olenka Villarreal
Activities with Oracle students
Check out playground equipment



10 Commandments of Making



Adam Savage took a few minutes on Sunday, May 18th at the 2014 Maker Faire Bay Area to share what he feels are the **10 Commandments of Making**. Braving the somewhat precarious elevated stage of the crowd favorite Life-Sized Mousetrap, Adam addressed the audience with bits of wisdom and jewels of experience. It was obvious from the laughter that many of these insights and observations struck close to home.



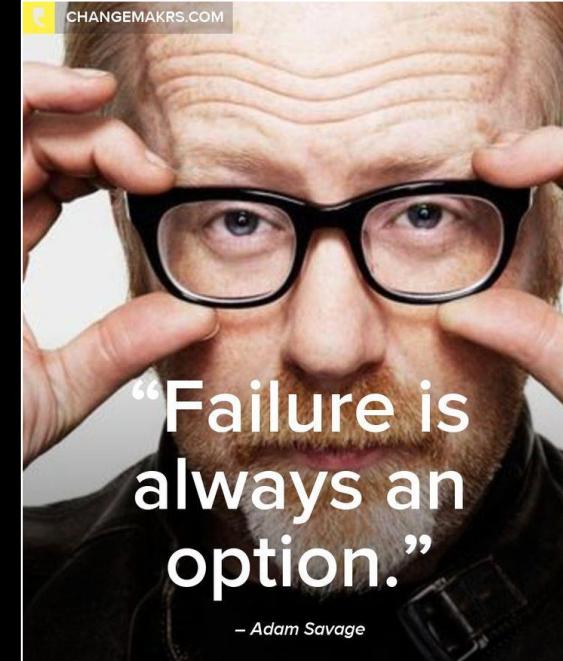
Adam Savage's 10 Commandments of Making - 10:03

10 Commandments of Making



Summary of the commandments according to Adam:

1. Make something
2. Make something useful
3. Start right now
4. Find a project
5. Ask for help, advice, and feedback
6. Share
7. Recognize that discouragement and failure are part of the project
8. Measure carefully
9. Make things for other people
10. Use more cooling fluid!



Today



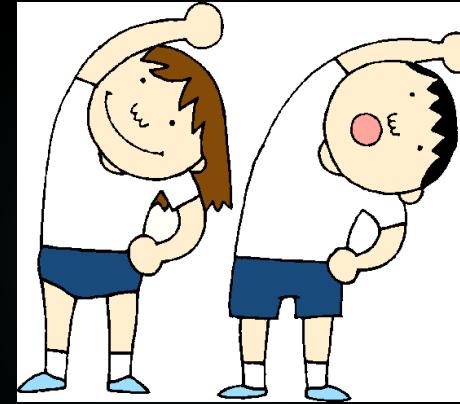
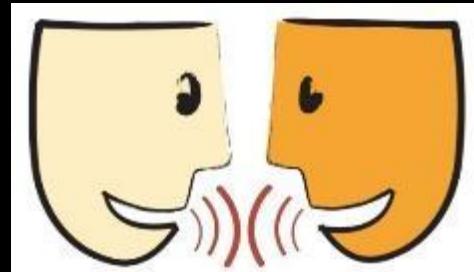
Assistive Robotics

Monroe Kennedy III, PhD

Assistant Professor of Mechanical Engineering and, by courtesy,
Computer Science - Stanford University

Activities

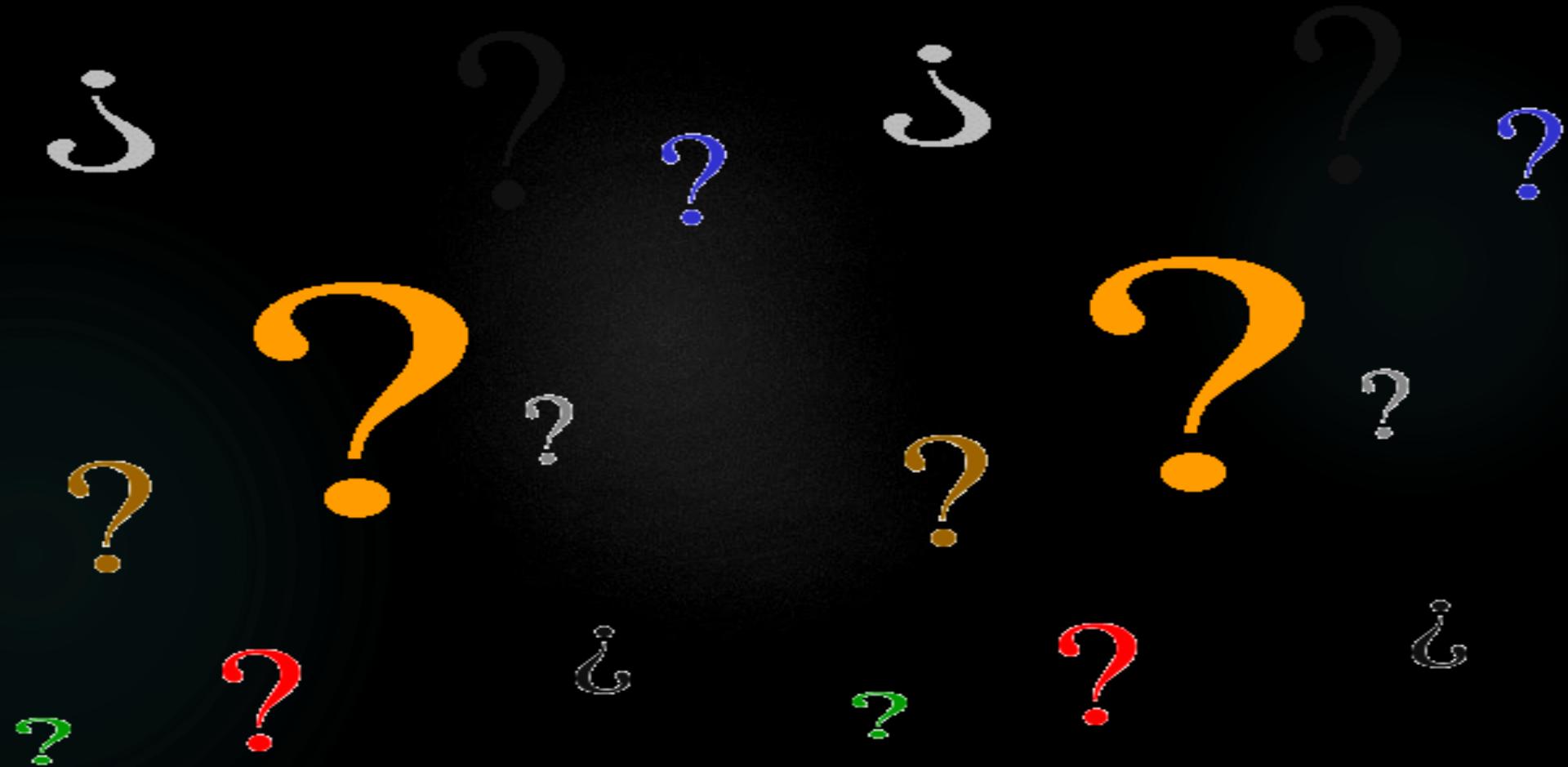
- ▶ Attendance sheet
- ▶ Evaluation Form
- ▶ Passenger Signup
- ▶ Time Slot Signup
- ▶ Stand up and stretch
- ▶ Take a bio-break
- ▶ Text message
- ▶ Web-surf
- ▶ Respond to email
- ▶ Talk with classmates
- ▶ Reflect on what was presented in class



Short Break

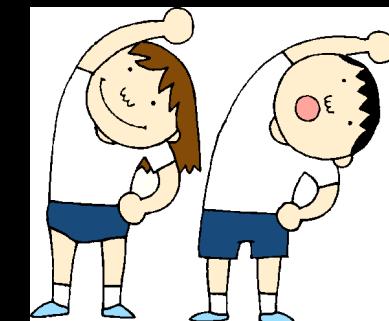
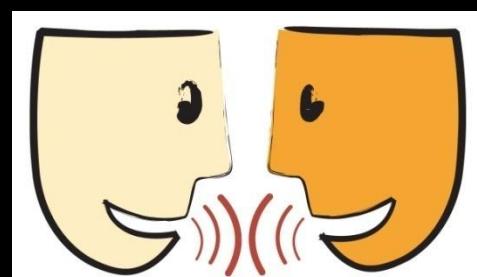


Questions?



Break Activities

- ▶ Sign attendance sheet
- ▶ Grab a cookie
- ▶ Stand up and stretch
- ▶ Take a bio-break
- ▶ Text message, web-surf, email
- ▶ Talk with classmates
- ▶ Reflect on what was presented in class





Adjourn



class dismissed

Laptops Galore



Time for Questions?



End the class

