January 23, 2025
Exoskeletons in Rehabilitation and Industry

ENGR110/210
Perspectives in Assistive Technology

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Stanford PhD Candidate

CLEARING A PATH
FOR PEOPLE WITH SPECIAL NEEDS
CLEARS THE PATH FOR EVERYONE!

Submitted by
Marlo Kohn

Questions?

Please notify me of your comments, suggestions, and concerns so I can explain / address / correct them.

Warden David Jaffe

Stanford Prison Experiment - 1971

► Simulation of a prison environment - guards & prisoners

► Guards were urged to act aggressively

► Guards became increasing brutal

► Psychological abuse

► One of the most "unethical psychological experiments in history"

► Unscientific and fraudulent

Titanium

What part of an iPhone is made from titanium?

Entire case, back, band, a brick off titanium

Just the band - 1mm of titanium cladding aluminum

Titanium

What is the function of the titanium part?

"Hardness", protect internal parts, stability, rigidity, lightweight, heat transfer, durability, impact resistance, damage prevention

Clout, aesthetics, marketing, illusion of innovation

Reduces fingerprints, marketing & advertising

Age-related Disabilities
What you missed because you were "Born Too Late"

▶ Music: Elvis, Beatles, Rolling Stones, Motown, Classic Rock

   ▶ Media: Vinyl records, 8-Tracks, Cassettes

▶ People: JFK, MLK ("I have a dream")

▶ Events: Woodstock, The Summer of Love, Moon Landing

▶ Sports: "The Catch"

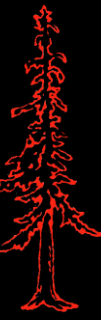▶ Introduction of Transistor Radios, Color TVs, TouchTone Telephones, Personal Computers

Age-related Disabilities
What you avoided because you were "Born Too Late"

- ▶ War in Vietnam
- ▶ The Draft
- ▶ Political unrest
- ▶ Nixon
- ▶ The Cuban Missile Crisis
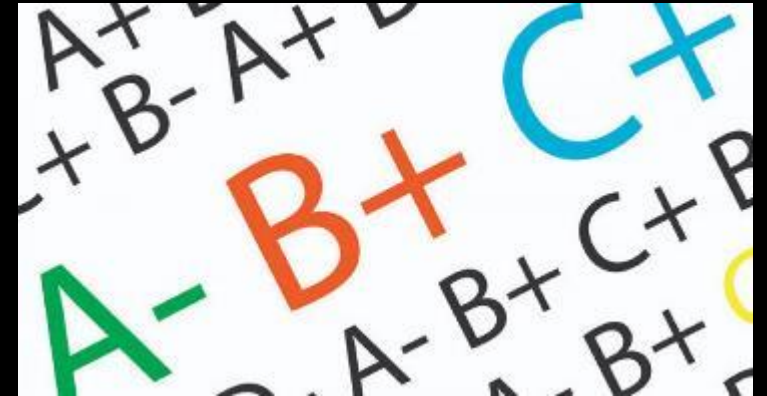- ▶ Disco

Reminder - Work with Diligence

▶ Time is your team's most precious resource

▶ 3 weeks of class until Mid-term Presentations - **Thu, Feb 13th**

Grading - Team Projects

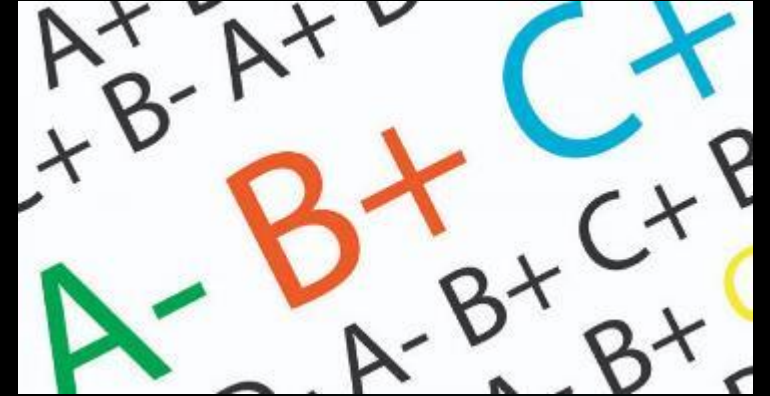| Deliverable	%
Mid-term Presentation	10
Mid-term Report	10
End-of-term Presentation	20
End-of-term Report	20
Prototype Design & Functionality	20
Project Suggestor Feedback	10
Participation *	10
Individual Reflection	0

* Participation includes attending class sessions, meeting with instructor, actively listening, posing questions to the guest speakers and the course instructor, engaging in class discussions, verbalizing thoughts and analyses, and submitting Weekly Project Reports or meeting with the course instructor.

Grading - Individual Projects

Deliverable	%
End-of-term Presentation	45
End-of-term Report	45
Participation *	10
Individual Reflection	0

* Participation includes attending class sessions, meeting with instructor, actively listening, posing questions to the guest speakers and the course instructor, engaging in class discussions, verbalizing thoughts and analyses, and submitting Weekly Project Reports or meeting with the course instructor.

Team Activities

- Understand the Problem / Challenge - search web for products
- Work as a team together on all activities
- **Decide on a cool team name**
- Fabricate low-cost prototypes
- Discuss and demonstrate the prototypes to the project suggestor
- Receive and analyze their feedback and suggestions
- Redesign and fabricate a refined prototype
- Iterate the process until the end of the quarter
- Take photos
- Report your project progress as a team
- **Sign up for PRL Safety Orientation**
- **Do not hesitate to ask questions**

Teams

- **First Team with No Name** – Universal Water Bottle & Phone Holder
- **Second Team with No Name** – Enhanced Visibility
- **Paw Patrol** – Laptray Artwork Easel
- **IP68** – Rain Shield
- **Fourth Team with No Name** – Laptop Storage
- **Fifth Team with No Name** – Water Bottle Opener
- **Sixth Team with No Name** – Accessible and Inclusive Playground
- **Seventh Team with No Name** – Accessible and Inclusive Playground
- **Scoop Squad** – Poop Management

Leftovers from Tuesday

▶ Stanford Accommodations

can't anticipate everyone's needs and preferences

▶ Tilly Griffins - Journalism graduate
Wrote for Stanford Daily
Spinal Muscular Atrophy
Needs 24-hour attendant

Persona

- ▶ The characterization of a typical / average person who represents the consumer group for a prototype being designed or a product being commercialized

- ▶ Not be a real person - can't get feedback (AI Persona?)

- ▶ Designing for an **imaginary person** results in an **imaginary solution**

- ▶ However, every person with a disability or older adult differs in their challenges, goals, preferences, and prejudices

- ▶ Solution - Consider products with versions, adjustability, ability to be customized, accessories, modularity, universally designed

Tuesday, January 28th

Bionic Ears: Cochlear Implants and the Future of Assistive Technology

Lindsey Dolch Felt, PhD

Stanford Program in Writing and Rhetoric

Today
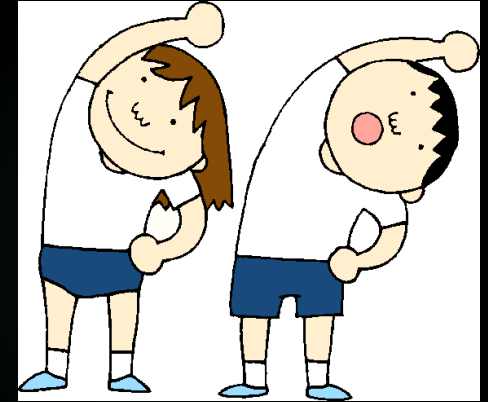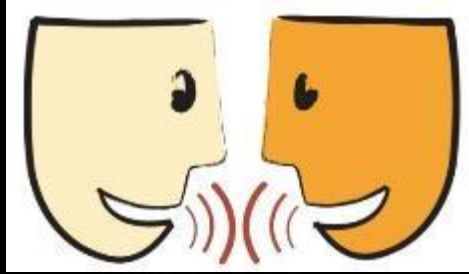

Brain-Computer Interfaces for Communication

Erin Michelle Kunz, PhD Candidate

Stanford University

Neural Prosthetics Translational Laboratory

Break Activities

► Sign Attendance Sheet

► 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