

January 11, 2011

ENGR110/210

Perspectives in Assistive Technology



David L. Jaffe, MS



Professor Drew Nelson

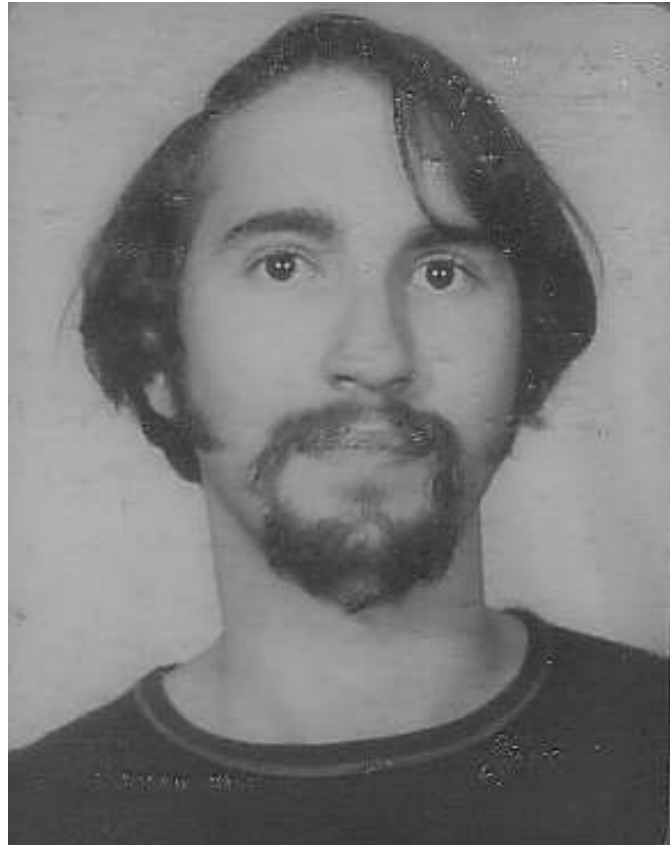


Harpreet K. Sangha

Questions?



Northwestern ID Photo



Fall 1970



Darnell Lamar Brooks



Eric Roy Younge



Ernestine Fu



Huong Xuan Phan



James Andrew Bertin



Jason Richard Prestinario



John Alexander Thiemer



Justin Beck



Katelyn Christine Cahill-Thompson



Kevin Montford Ting



Marcus Andres Albonico



Matthew Brian Bookman



Matthew Dean Goodyear



Nausheen Fathima Mahmood



Nayo Marel Hill



Parth C. Bhakta



Petr Johanes



Rebecca Elizabeth Taylor



Shilpa Sarkar



Stellios Zacharias Leventis



Stephen Andrew Hibbs



Taryn Dechele Sanks



Thomas Charles Waggoner



Thomas Peter Alan Robson



Zachary Mauro D'Angelo



Monica Frances
Bendernagel



Karen Alicia Hauser



Nick Frank LaVassar



Logan Michael McCoy



Biju Erieye Obi



Renata Aryanti



Reyna De Los Angeles
Garcia



Sarah Asem Toukan



Clay Young Heins



Samuel Gardner Garrett



Erica Elizabeth Salazar

Thanks to Spencer Johnson & Logitech



Don't have time to work on a project this year?

- Take ENGR110/210 for 1-unit now
- Work on an assistive technology project next year as independent study, CS194, ME113
- Get approval of your faculty advisor

Do you have a time conflict?

- See me if you would like to listen to the lectures but have a time conflict

RAFT Projects

- A maximum of 2 student teams should work on RAFT projects
- Two kinds of projects:
 - Explore designs for accessible activities
 - Explore designs to make existing activities accessible
- Ok for teams to share background tasks
 - Driving to RAFT
 - Interviewing students and teachers
- Check website for updated project preferences
 - <http://engr110.stanford.edu/preferences.html>

Engineering Design Process

- Understand the problem
- Determine the need
- Research what has already been done
- Brainstorm design concepts
- Select a concept
- Fabricate, test, evaluate, repeat
- Report / present
- Reflect

Engineering Design Process

- Does not include:
 - Building to another's vision
 - Incremental improvements
- Utilize project resources
- Make and justify your decisions

Individual Projects

- Interview 2 individuals with a disability - excluding those participating in the student panel on Jan 20th. (I can suggest individuals.)
- Report on their lives, challenges they have faced, success they have achieved, desires for the future, assistive technology they use, and problems they have experienced with them.
- Let me know what project you intend to work on.

Project Documentation

- Lab notebooks
- Photos
- Videos

Work with Diligence

- 7 weeks of class left
- Mid-term in 4 weeks

Assistive Technology Market

- Many people with a disability – in US and world-wide
- Every consumer has unique needs and desires
- Largest homogeneous group in the US is wheelchair users
- Lack of a well-defined mass market means that companies serving individuals with disabilities are small and their products are expensive

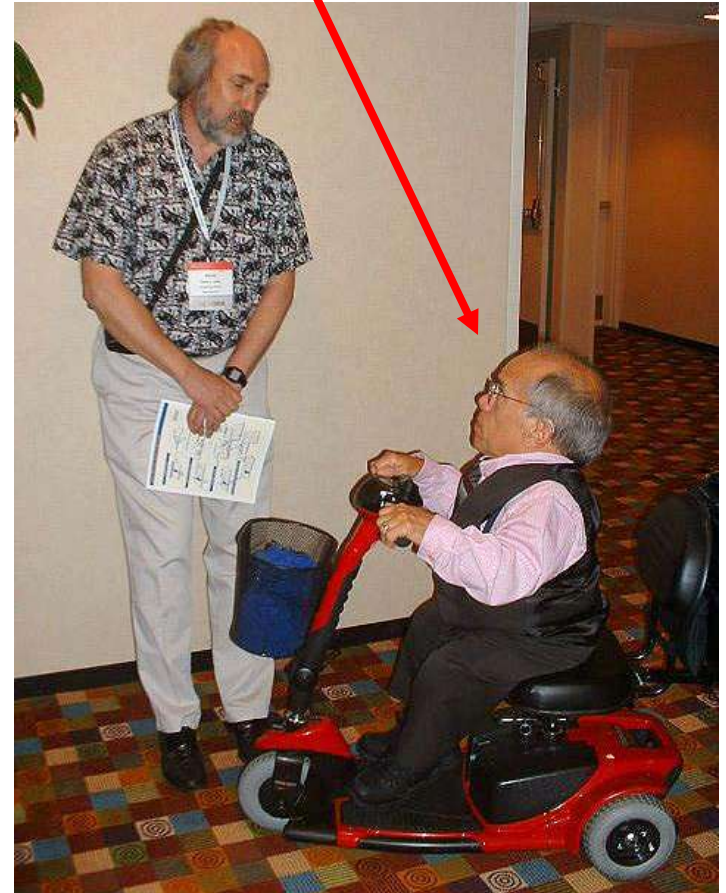


Assistive Technology Market Strategies

- Build an assistive technology device that has a wide market appeal
 - Seniors
 - Gamers
- Take advantage of existing technology in new assistive technology devices
 - NeuroSky MindSet
 - Computer technology

Robert Van Etten

- Dwarf
- Midget
- Shorty
- **Little person**
- Munchkin
- Elf
- Height challenged
- Scooter-guy



Who is Disabled?

Disability is defined as a health condition or physical impairment that prevents an individual from taking full advantage of life's opportunities such as education, vocation, recreation, and activities of daily living.

Who is Disabled?

- An individual with ALS cannot walk, talk, or personally perform any of the usual activities of daily living. He has only very limited volitional control of one finger.
- This individual employs a powered wheelchair for his mobility.
- This individual employs a speech output communication device to facilitate his communication.
- The individual is Stephen Hawking, often described as the smartest person alive.



Who is Disabled?

- A grade school child has an accident that severs the tip of his index finger on his right hand.
- Because of this, he cannot continue playing his piano.
- An artificial fingertip is fabricated that enables him to continue to enjoy playing.



Who is Disabled?

- A runner is not good enough to compete in the Olympics.
- The runner, Oscar Pistorious, has a double lower limb amputation.
- He wears Cheetah Flex-Foot carbon fiber transtibial artificial limbs made by Ossur that enables him to run faster than his able-bodied competitors.
- He has been disqualified from competing in the Olympics because his artificial legs give him an unfair advantage.



Thursday, Jan 13th



Debbie Kenney, MS, OTR/L

The Transdisciplinary Team: Bridging the Gap between Consumers and Products in Rehabilitation Medicine

Today



Gayle Curtis – Design Consultant

**Design Thinking and Applied Ideation for
Assistive Technologies**