

January 22, 2013

ENGR110/210

Perspectives in Assistive Technology



David L. Jaffe, MS

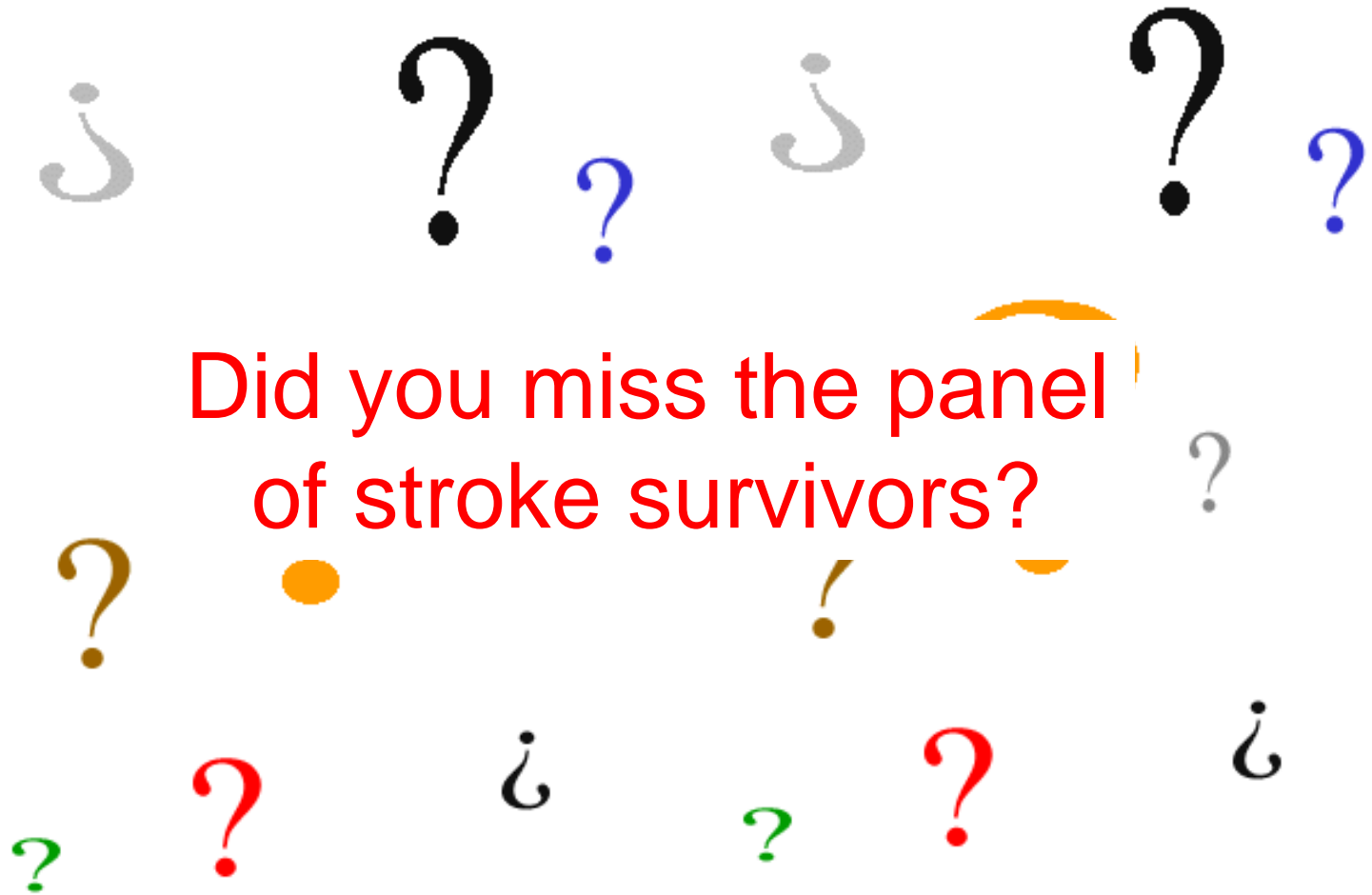


Professor Drew Nelson



Krystal Le

Questions?



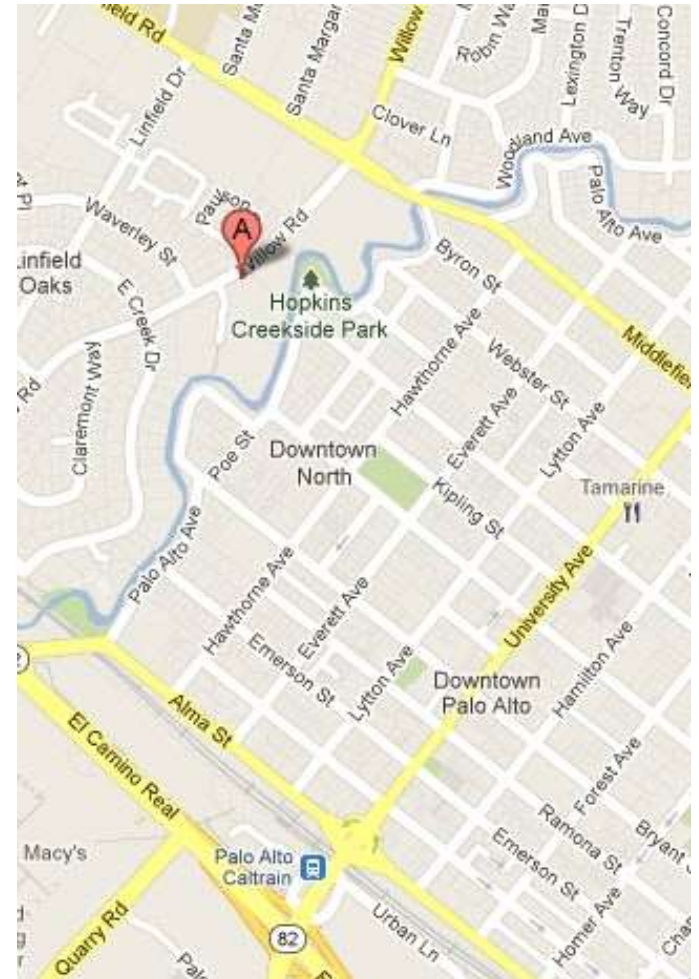
Listen to the [recorded audio](#) – starting at 1:08:35

Agenda

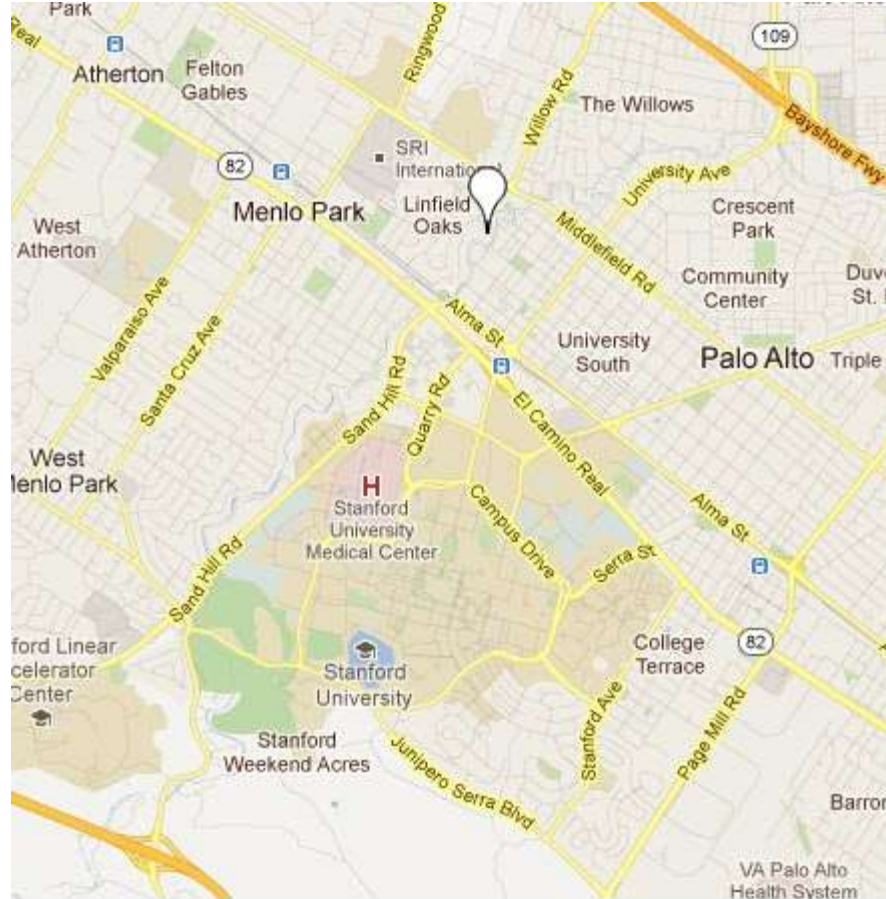
- Willow Garage Tour on Thursday
- Team Formation & Project Suggestions
- PRL / Room 36 Passes
- Famous People with Disabilities
- Student Panel:
 - Vivian T. Wong
 - Emily Kelly
 - Morgan Duffy
 - Fiona Hinze – lost her voice
 - Page Ive

Willow Garage Tour on Thursday

- Passenger signup sheets
- Attendance limited to students and drivers

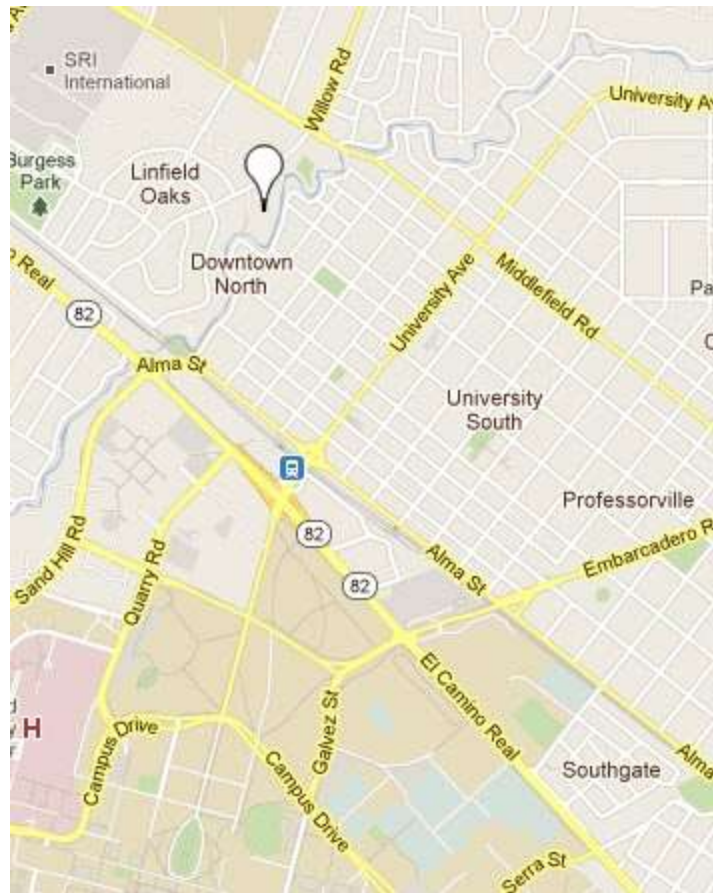


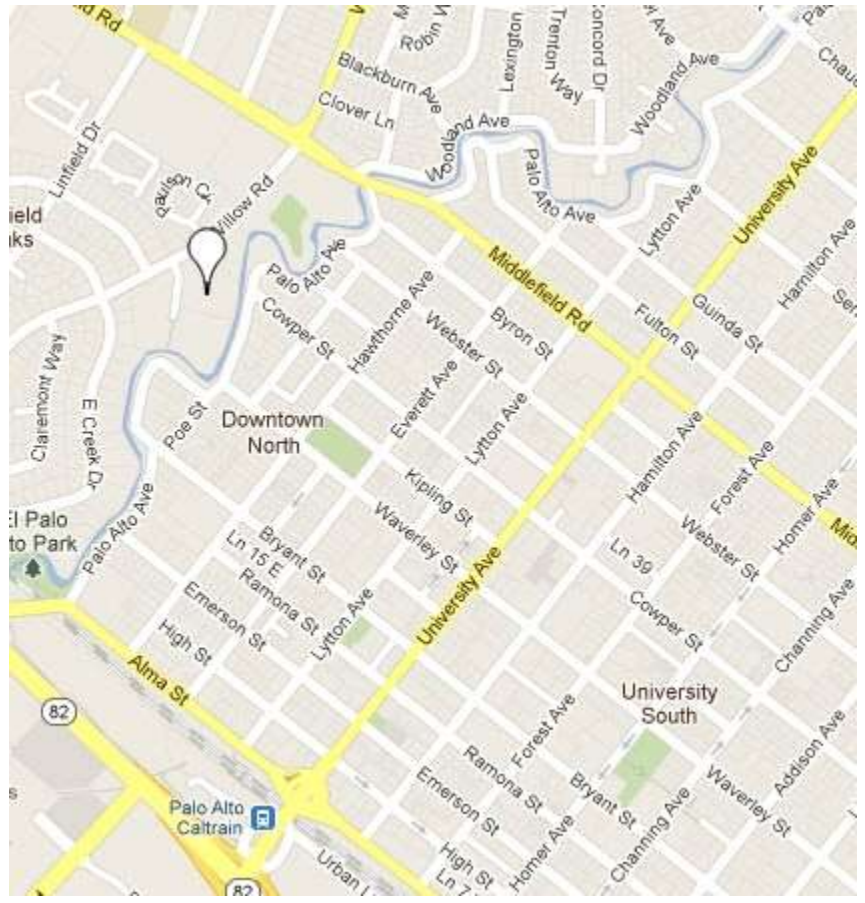
Willow Garage



[Link](#)

68 Willow Road
Menlo Park, CA 94025

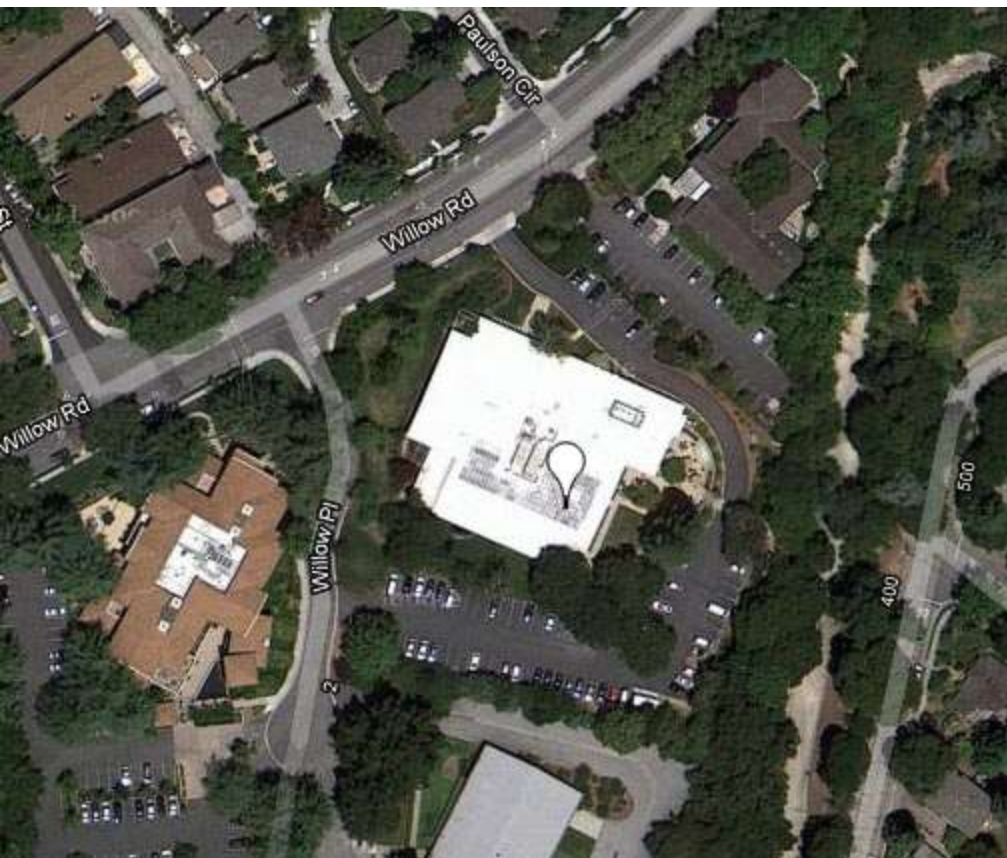


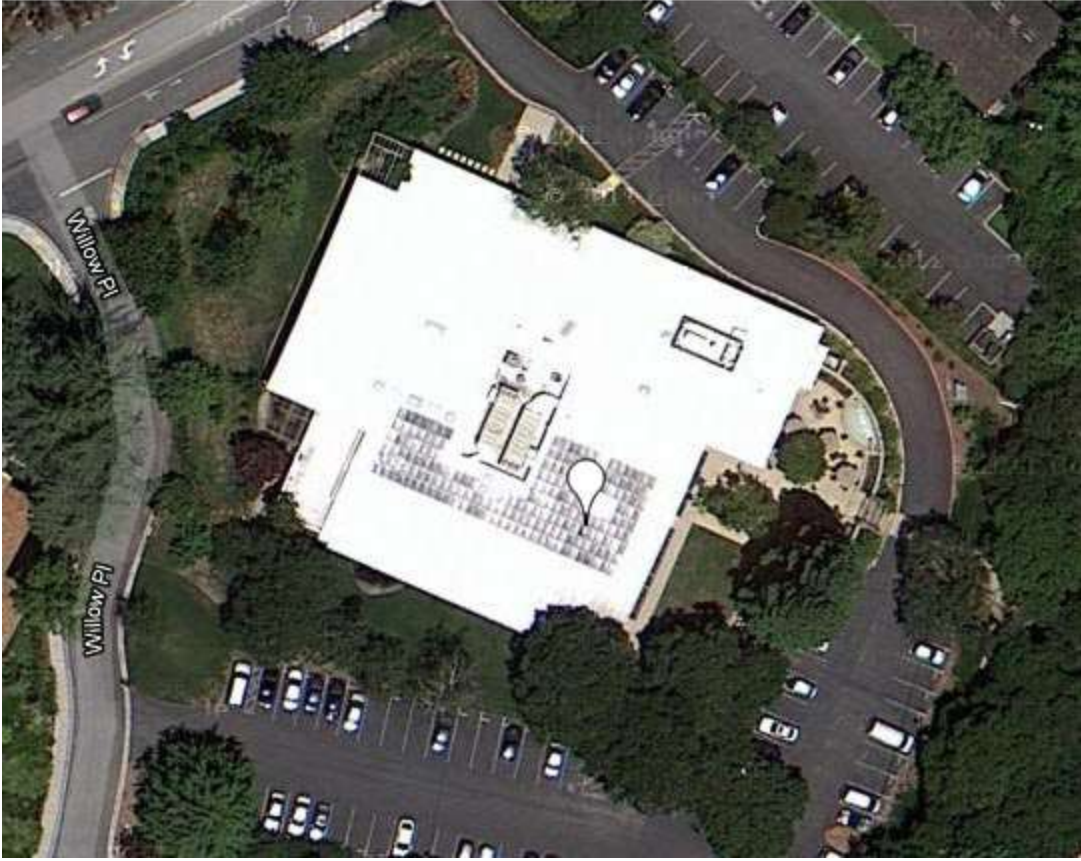












Team Formation

- Send email to Dave
 - Team members
 - Name of team
 - Name of project
- Think about
 - Name of device or software
 - Logo
- Schedule team meeting with Dave this week
- [Quick start suggestions from last year's students](#)

Comments from Last Year's Students

*If I were to go through this process again, there are a few things I would do differently. I would like to **spend a larger amount of time on the empathizing** step of the design process and be able to get to know the consumer of the product and their concerns on a closer level. Also, I would like to **engage the team in a longer brainstorm process** and have **repeated sessions** after each idea is fully drawn out and created. These sessions provided the best opportunities for advancing our design and making each prototype more effective and efficient at accomplishing the set tasks.*

Comments from Last Year's Students

*Looking back, I now realize how important it is to really **define the problem as specifically as possible from the beginning**, without being too narrow-minded that the general purpose is forgotten.*

Comments from Last Year's Students

*I definitely learned that **prototyping early on is a must** - even if I had no clue what I was going to do then. Next time, I will definitely try to get started earlier on building things - even if they are at their less-than-best quality!*

Comments from Last Year's Students

*If I could go back, I would have **sought out more users** to discuss the topic sooner. I wish I could have received more feedback from members of my target group to incorporate their thoughts and concerns in my final design. Moving forward, I will definitely make a concentrated effort to **involve the user group throughout the entire design process**. I think this will contribute to an overall more effective and successful concept and design.*

Comments from Last Year's Students

*I would have attempted to **prototype far more often**, preferably at least 8 hours a week, instead of about 8 hours total, with some more time working on further ideas.*

Comments from Last Year's Students

*In retrospect, improving the success of our design would have been most largely dependent on **determining a solvable need as quickly as possible**. If this could have been decided upon within the first two weeks of class through user and company interviews, teams would be much more successful in design prototyping and brainstorming being that iteration would have been a more realistic possibility.*

Comments from Last Year's Students

*If I were to do the entire process again I would **invest more time talking to fellow students and bouncing off ideas.***

*If I were to go through this process again, I would **utilize the teaching staff more.***

*Throughout the design process, I now see that it is imperative to **keep in touch with users.** I feel it would be very beneficial to **consult different professionals** in expertise related to the project. Insight from a range of perspectives, from users to experts, would truly enhance a design. I also learned the importance of making sure we can **prototype our ideas.***

PRL & Room 36 Shop Passes

Paperwork submitted earlier today

Agnes



“At first glance, it may look like a mere souped-up jumpsuit. A helmet, attached by cords to a pelvic harness, cramps my neck and spine. Yellow-paned goggles muddy my vision. Plastic bands, running from the harness to each arm, clip my wingspan. Compression knee bands discourage bending. Plastic shoes, with uneven Styrofoam pads for soles, throw off my center of gravity. Layers of surgical gloves make me all thumbs.”

Age Gain Now Empathy System

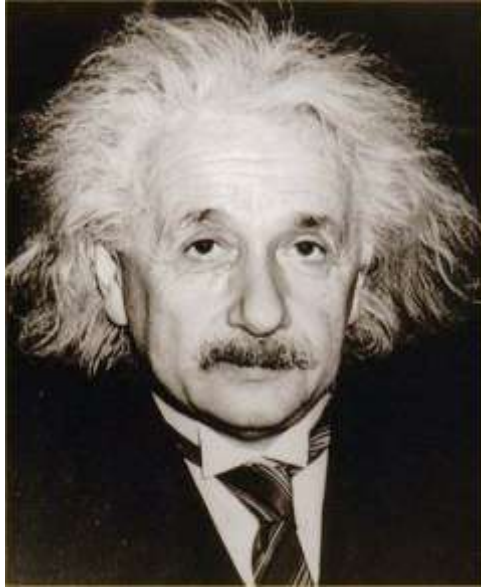
MLK

How do the teachings of Dr Martin Luther King Jr. relate to people with disabilities?

“I have a dream that my **four little children** will one day live in a nation where they will **not be judged by the color of their skin** but by the **content of their character.**”



Famous People with Disabilities



Albert Einstein
Physicist
Learning Disability



Annette Funicello
Mouseketeer
Multiple Sclerosis



Bob Dole
Senator
Paralysis

Some are / were disabled from birth or from an early age.

Famous People with Disabilities



Christopher Reeve
Actor
Spinal Cord Injury



Franklin D. Roosevelt
President
Polio



Helen Keller
Author
Deaf-Blindness

Others became disabled after they achieved notoriety.

Famous People with Disabilities



Itzhak Perlman
Violinist
Polio



Jay Leno
Comedian
Dyslexia



Jim Abbott
Pitcher
Congenital Deformity

They pervade all aspects of our society.

Famous People with Disabilities



John Callahan
Cartoonist
Spinal Cord Injury



Jose Feliciano
Musician
Blindness



Josh Blue
Comedian
Cerebral Palsy

They contribute to society's diversity.

Famous People with Disabilities



Lou Ferrigno
Actor
Hearing Impairment



Lou Gehrig
Baseball Player
ALS



Ludwig Von Beethoven
Composer
Hearing Loss

They contribute with their underlying talent and abilities.

Famous People with Disabilities



Magic Johnson
Basketball Player
HIV



Marlee Matlin
Actress
Hearing Impairment



Mary Tyler Moore
Actress
Diabetes

Talent and the ability to contribute trumps disability.

Famous People with Disabilities



Sonia Sotomayor
Supreme Court Justice
Type I Diabetes



Michael J. Fox
Actor
Parkinson's Disease



Mohammad Ali
Boxer
Parkinson's Disease

Ability and talent comes from education and opportunity.

Famous People with Disabilities



Moses
Religious Leader
Speech Impediment



Ray Charles
Musician / Singer
Blindness



Richard Pryor
Comedian
Multiple Sclerosis

Access to education is a key issue.

Famous People with Disabilities



Sammy Davis Jr.
Performer
Lost Eye



Stephen Hawking
Physicist
ALS



Stevie Wonder
Singer / Songwriter
Blindness

Acceptance in society is another important concern.

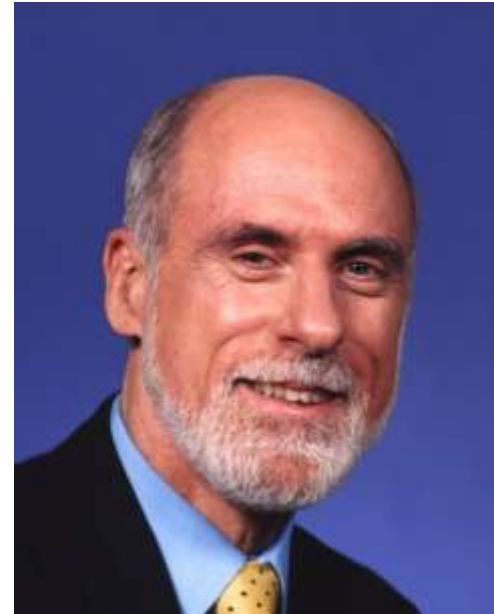
Famous People with Disabilities



Larry Leifer
Professor
Hearing Impairment



Tom Kane
Professor Emeritus
Multiple Impairments



Vint Cerf
Internet Evangelist
Hearing Impairment

Assistive technology is instrumental in gaining access to education and functioning in the real world.

Famous People with Disabilities



Teri Adams
Assistant Director OAE
Wheelchair User



TV Raman
Google Researcher
Blindness



Peter Axelson
Rehab Engineer
Paraplegia

Assistive technology can overcome limitations in sensing, communication, mobility, and manipulation.

Famous People with Disabilities



David Patterson
Governor of NY
Blindness



Ralf Hotchkiss
Engineer
Paraplegia



Bethany Hamilton
Surfer
Lost Arm

Assistive technology levels the field so that an individual's talent and skills can flourish.

Famous People with Disabilities



Horatio Nelson
Lord Admiral
Lost Arm



Daniel Inouye
Senator from Hawaii
Lost Arm



Gabrielle Giffords
Congresswoman
Traumatic Brain Injury

Can you think of others?



Thursday



Dave Robson, Matei Ciocarlie, Kaijen Hsiao, Henry Evans, and PR2
Tour of Willow Garage



Today

Perspectives of Stanford Students with a Disability



- Morgan Duffy
- Vivian T. Wong
- Emily Kelly
- Fiona Hinze
- Page Ive

Short Break



Perspectives of Stanford Students with a Disability



- Morgan Duffy
- Vivian T. Wong
- Emily Kelly
- Fiona Hinze – lost her voice
- Page Ive



Morgan Duffy

Studies and experiences have lead Morgan to concentrate her work on something essential in her life: disability. As a woman with a disability, Morgan has traveled to inaccessible parts of the world to work with children who remind her of her childhood friends from summer camp. At Stanford she studies Cross Cultural Health and Policy and has completed internships at Whirlwind Wheelchair; the US Senate Committee on Health, Education, Labor, and Pensions; and Stanford Hospital. In her spare time, Morgan enjoys shopping in open markets, being outdoors, taking road trips, meeting new people, talking politics, and reenergizing with hot yoga.



Vivian T. Wong

Vivian Wong graduated from Stanford last year with a double major in International Relations and French. Currently she is working at two education nonprofits in the city, as part of a public service fellowship through the Haas Center. She was born with a congenital spinal disorder, called spondylothoracic dysplasia, which translates to a truncated torso, forward curvature of her spine, limited neck rotation and reduced lung capacity. From Hong Kong to the Bay Area, her condition has puzzled many doctors and, to this day, she has yet to meet someone with the same disability.

Due to her limited neck rotation, she would not be able to drive safely without the use of assistive technology. The installation of cameras to cover blind spots and pedal extensions allows her to drive independently.

Since her sophomore year, she's been committed to dispelling the stigma of the anti-normative and encouraging students with disabilities to advocate for themselves. At Stanford, she created "Power to ACT: Abilities Coming Together", a student group dedicated to safe social spaces for students with visible and hidden disabilities. Throughout college, she became more comfortable with her disability and welcomes you to ask her anything.



Emily Kelly

Emily Kelly is a Stanford Freshman. She comes from snowy Colorado, where she enjoys her family, friends, Nordic skiing, and snowshoeing. At Stanford, she is a member of SURJ, the Stanford Undergraduate Research Journal, and a competing member of the Stanford Intercollegiate Bridge Team. She is deeply interested in how the brain works and hopes to soon explore the relationship between neuroplasticity and neurological disorders such as learning disabilities.

Emily has Dyslexia and a Working Memory Deficit. She often finds herself surprised at the surprise others exhibit when they find out. Thus, she is quietly committed to improving the conceptions of her community on LD by helping friends with learning disabilities improve their self-conceptions, and showing that those with disabilities also have valuable skills to offer. She is excited to start her second quarter of college and grateful to her family and Stanford for their invaluable aid and accommodation in relation to her learning differences.

Dyslexia and Working Memory Deficit

How learning disabilities affect my life

Introduction

- Freshman
- Denver, CO
- Interested in the brain

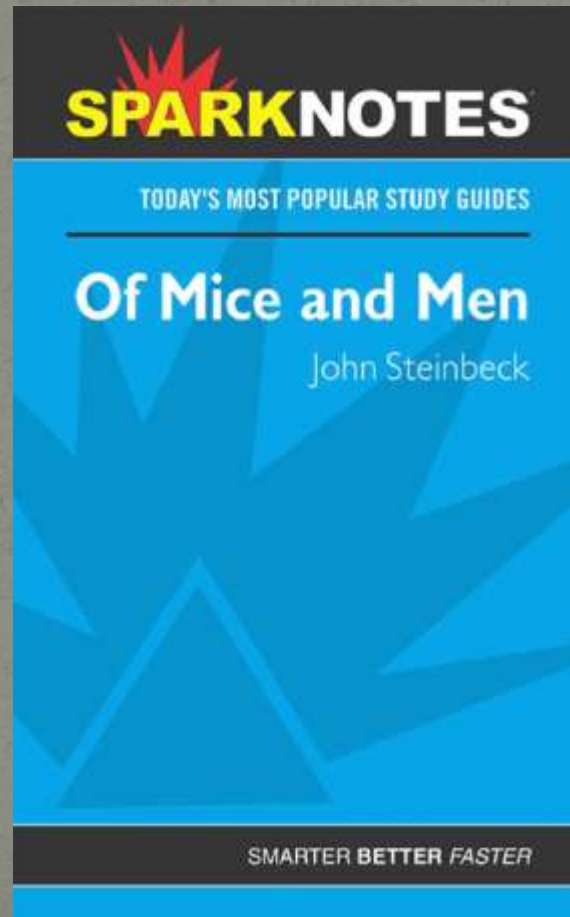


Manifestation of LD in Academics

- Problems with spelling
- Reading speed and accuracy
- Memory gaps
- Prolonged memory retention

Coping Strategies

- Reading and Reading summaries



- Gaps in details

Coping Strategies

- Strategic selection

compound.^[24–32] The molecular descriptors might be calculated by means of many types of QSAR-designed software (e.g., DRAGON,^[33,34] CODESSA,^[35,36] CAChe^[37,38]) or some of them could be directly extracted from the results of quantum-mechanical calculations. The most commonly used level of QM theory in QSAR studies is represented by a group of semi-empirical methods applying AM1, PM3, PM5, **RM1**, and PM6 Hamiltonians.^[39–41] In most cases this level of theory is sufficient for the description of structural variability between the studied compounds. In addition, semi-empirical methods are not time consuming because some of the integrals (normally calculated ab initio with the Hartree–Fock formalism) are replaced by the parameters related to the experimentally measured properties (e.g., ionization potentials, dipole moments, enthalpies of formation, etc.). Using such simplified approaches it is possible to calculate the molecular parameters for many chemical compounds in a relatively short time. This is very useful especially in modeling or virtual screening for large sets of compounds.^[41,42] However, when the calculations are

- Sometimes you don't guess right

Coping Strategies

- Book on tape



- Time and focus

Resources

- Tutoring
- Friends
- Triangulation of information
- Spell check
- Time and half

Future

Humbio?

Psych?

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graph TD; A[Humbio?] --> C[Career in Research]; B[Psych?] --> C;
```

Career in Research

Moving Forward in LD

- Call for research:
 - General memory enhancement
 - TBI and PTSD Intervention
- Call for possible assistive technology:
 - Text to speech improvements
 - I'm asking you...

The End

- Thank you!



Fiona Hinze

Fiona is a senior at Stanford University, majoring in psychology with an emphasis in health and development.



Page Ive

Page Ive is a junior majoring in Science, Technology, and Society with a focus in IT, Media, and Society. Disabilities have played a large role in Page's life because both she and her older brother have invisible disabilities. Page has attention deficit disorder (ADD) and dysgraphia, a disability that makes it difficult to hand-write legibly. Page became involved in the disability community as a result of the significant impact academic accommodations had on her ability to succeed. With the use of a computer, she could finally demonstrate her abilities and was highly motivated to do so. Throughout high school she volunteered regularly with Northwest Special Families and participated in several inbound/outbound US / Bahrain exchanges with Mobility International USA, culminating in her work as a consultant during a professional outbound exchange. She also applied her passion for theater to disability advocacy by organizing an accessible theater performance for children. At Stanford, she is very familiar with the Office of Accessible Education and encourages students to utilize its valuable resources. This year she joined Power to ACT and is taking advantage of the opportunity to learn as she creates a website for the group.

In 2010 Page was one of two recipients of the Anne Ford and Allegra Ford Thomas scholarship, a \$10,000 award for her disability advocacy.

Other Students with Disabilities?



Class
Dismissed!

