February 9, 2012

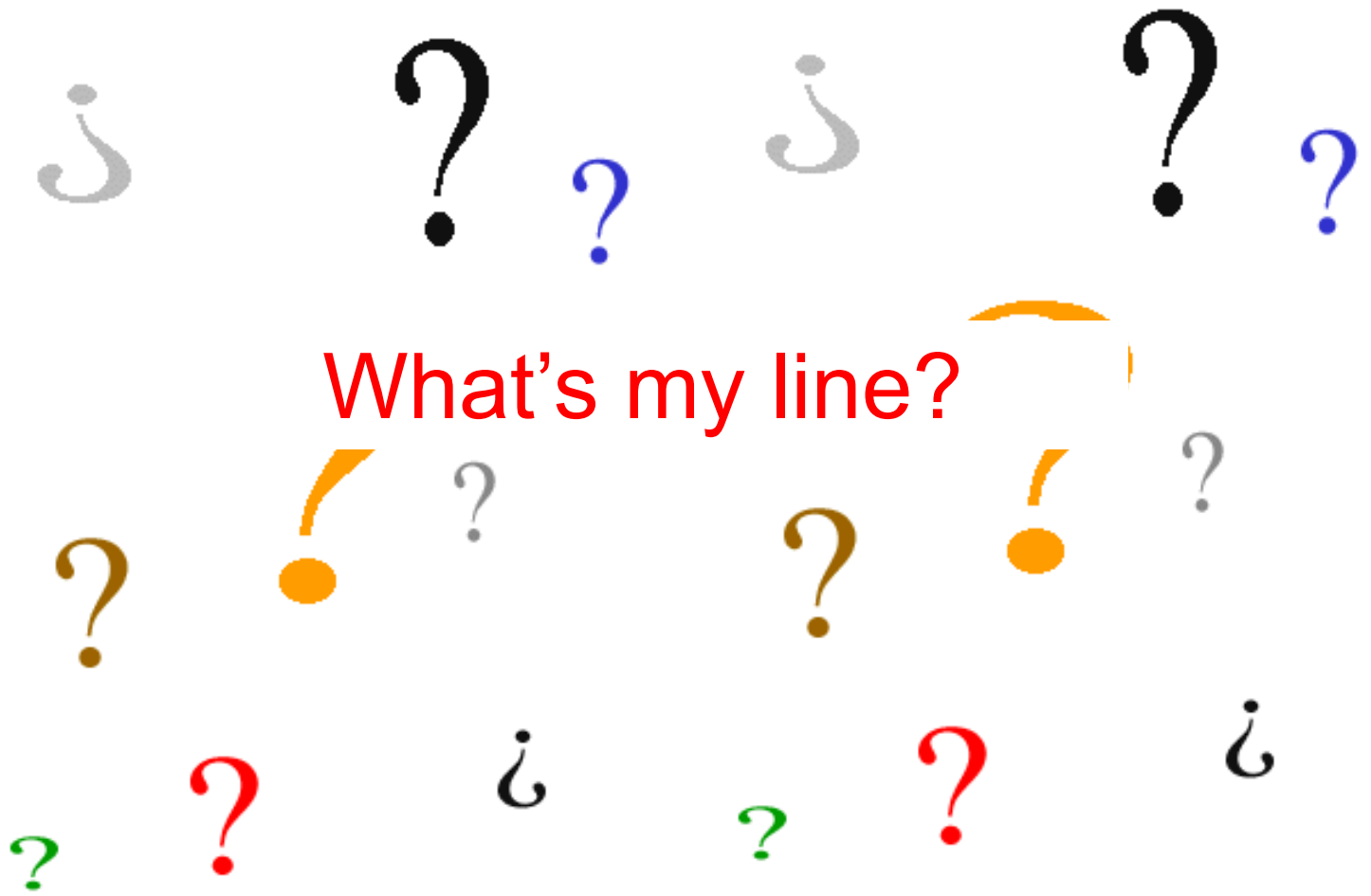
ENGR110/210
Perspectives in Assistive Technology

David L. Jaffe, MS

Professor Drew Nelson

John Thiemer

Questions?



Announcement by Ben Strong

VIA – Stanford Programs Director

2012 Exploring Social Innovation (ESI) Projects

Exploring Social Innovation

- **2-week program on social innovation *(Mar 18-30)***
- **Social entrepreneurs in Stanford, Silicon Valley, and San Francisco**
- **25-30 Japanese participants**
- **Organized by VIA staff and student team (Stanford, Berkeley, & Japan)**

<u>Social Innovation</u>: new ideas and solutions to improve lives

rogra Goals:

- **Explore social i tion**
- **Design solutions**
- **Take action n**

2 Project Types

Partner-driven:

work in a small group on an issue presented by one of our partner organizations

Specifications:
Project must adhere to the stated mission of the partner organization
Must work together in a group of 3-4
Must respond to input and feedback of partner organization and advisors

Student-Initiated:

propose a project you want to work on and form a small group to help you develop this.

Specifications:
Project must have a clearly defined Vision , Mission–.Plan for Leadership and Sustainability
Must appeal to the interests of other students in the program

- Submit project proposal for review
- Recruit a team of 3-4 students

2012 ESI Partners

ISAK International School of Asia, Karuizawa

WINGLE

(two teams):

Project focus:
On operational aspects of the school, such as recruitment and fund-raising

(two teams):

Project focus:
1) to get more users on PIRIKA site. 2) encourage ongoing use of PIRIKA. 3) to change the negative perception of cleaning up trash.

(two teams):

Project focus:
To generate ideas for solutions to difficulties people with disabilities are facing everyday (see Wingle handout for more details).

… Create an impact beyond the 2 weeks

Timeline

Jan - Feb	Field research on partner organizations
Mar 18-24	Week 1 (in San Francisco)
Mar 25	Design-thinking Bootcamp (at Stanford)
Mar 28	Creating accessibility in the Workplace
Mar 29	Teams Present Project Ideas (at Stanford)

Team Mid-term Reports

- **Cover page** - include course name & year, project title, team name, team member's names, and team member's photos
- **Abstract** - one paragraph summary of objectives, approach taken, and results of the project so far
- **Introduction** - problem / need to be addressed, problem / need background
- **Objectives -** project goals and rationale
- **Design criteria** - background research, interviews with project suggestors and potential users, design specifications, brainstormed design alternatives (at least 3)
- **Methods** - what did your team do and why - include any sketching, prototyping, model building, preliminary testing, analyses of design alternatives

Team Mid-term Reports

- **Results -** discuss specifics of your design alternatives such as features, benefits, aesthetics, cost, safety, reliability, usability, test results, feedback from users, etc.
- **Discussion** - include engineering challenges and suggestions to further develop and fabricate a chosen design
- **Timetable** - provide a timetable of tasks for the remainder of the quarter
- **References** - bibliographic citations and websites visited
- **Acknowledgements** - mention all individuals and facilities who helped you
- **Appendices** - detailed sketches, calculations, testing notes, relevant vendor information, etc. that are referenced in the main body of the report

Team Mid-term Presentations

- Grade includes:
  - Quality of presentation
  - Process employed
  - Project visualizations

- Mid-term report due Monday, Feb 20th at 5pm in Dave's office

- See: http://engr110.stanford.edu/assignment1.html

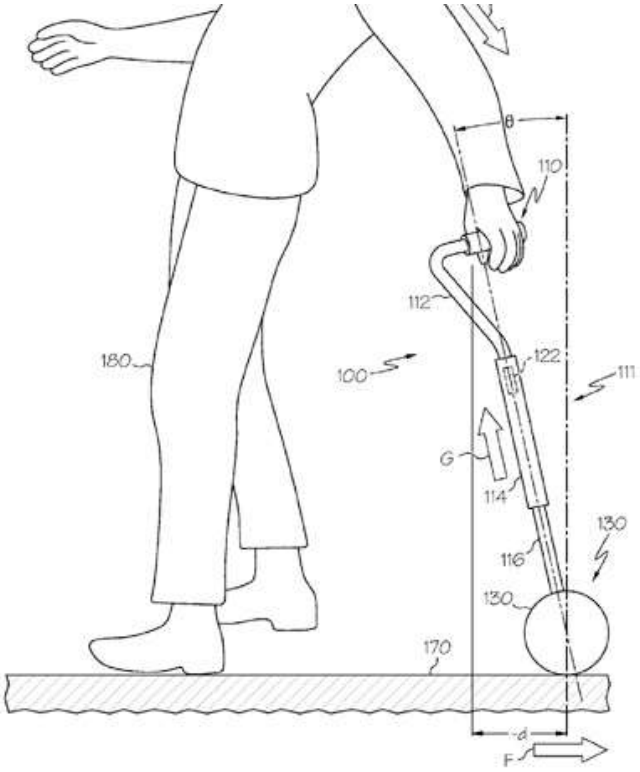
All Projects

- Updates
  - Continue to send updates, including photos
  - Report on Room 36 experiences

- Problems?

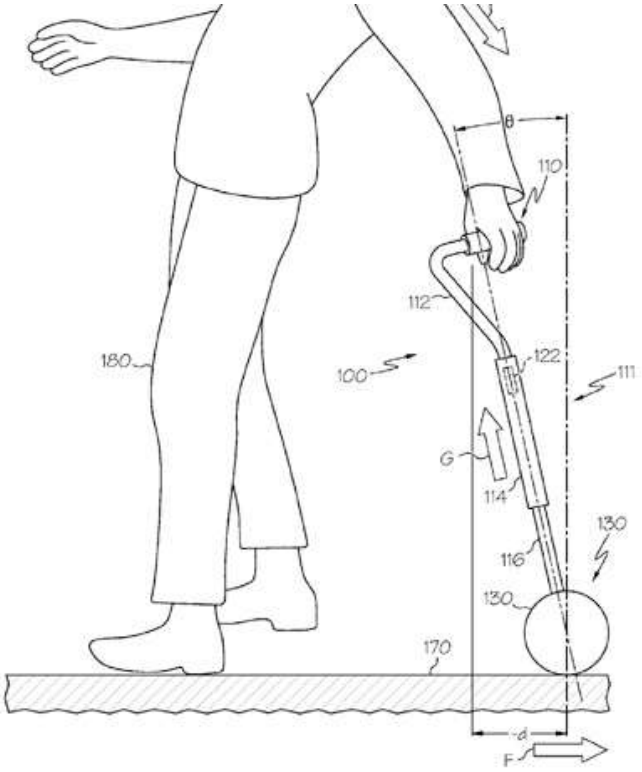
Robotic Walking Stick

Toyota and IIT have invented a robotic walking stick that offers users a way to right themselves when they begin to fall



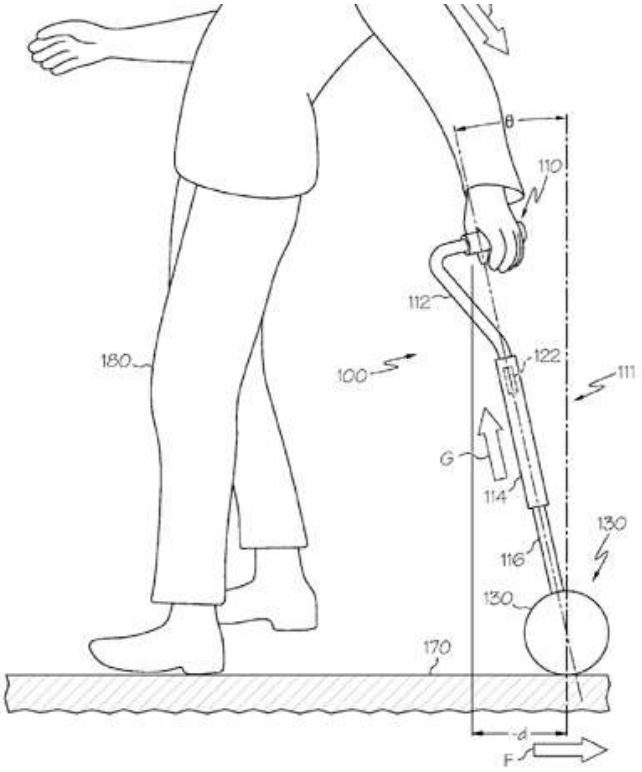
Robotic Walking Stick

The device consists of a bidirectional, chunky rubber wheel that is driven by motors at the foot of a stick that is packed with balance-sensing accelerometers.



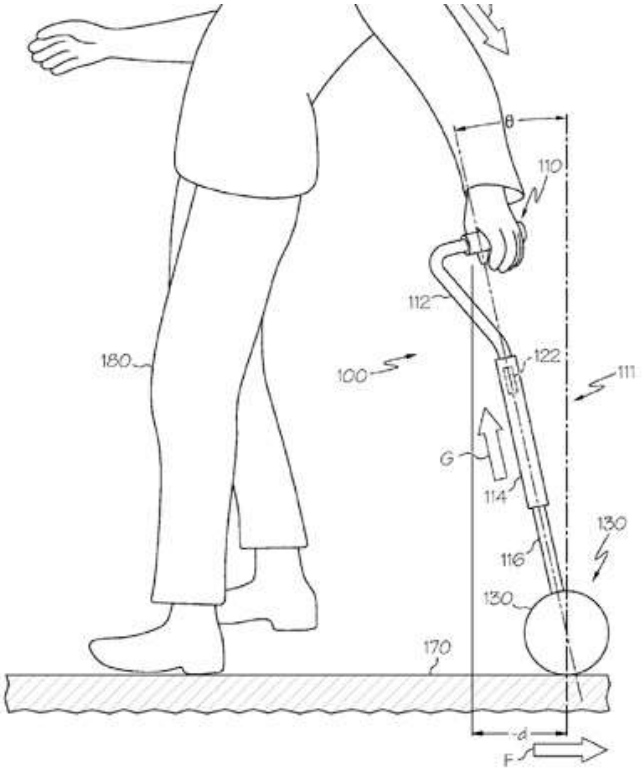
Robotic Walking Stick

The hand grip has a force sensor with which the user controls the strength of the wheels forward motion or backspin.



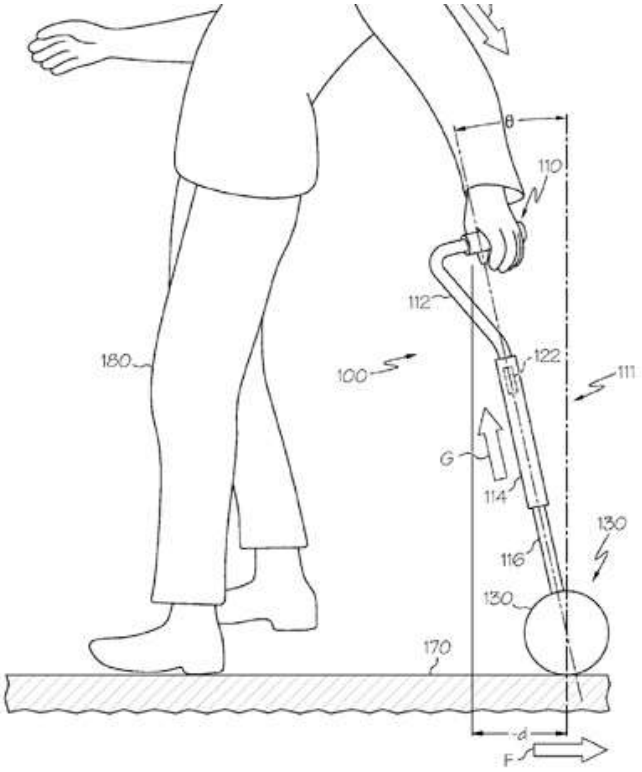
Robotic Walking Stick

If the user starts to fall forwards, gripping the handle causes the wheel to slowly-but-strongly push back on the user's arm, hopefully righting them.



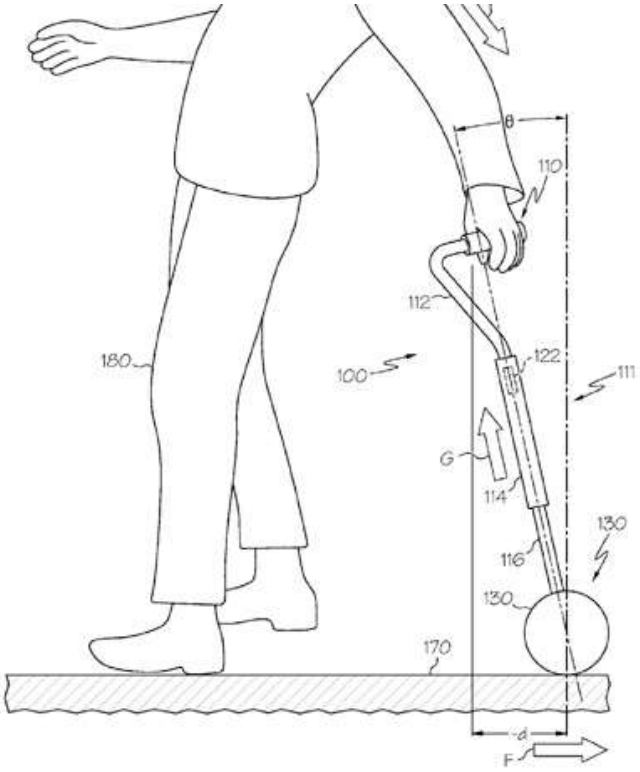
Robotic Walking Stick

If they start to fall backwards, the multi-axis accelerometers sense the direction needed to push them back upright.



Robotic Walking Stick

Comment on the design, its potential usefulness, the user populations that may benefit, and chances for commercial success.



Tuesday

Nancy Frishberg, PhD

MSB Associates

What's up with the Telephone?

Today

Annuska Perkins

Microsoft

Designing Inclusive User Experiences

Short Break