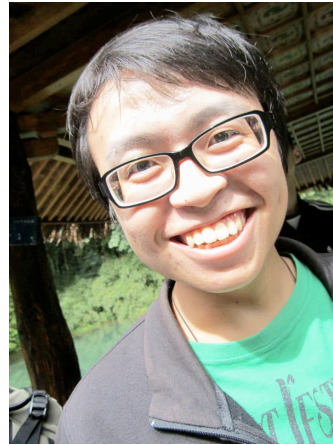


Toward Autonomous Navigation for Individuals

Prof. Nick Wang
ECE, NCTU, Taiwan

Prof. Nick Wang and Assistive Robotics Group

- Postdoc, CSAIL, MIT (2013-2016)
- PhD, UMass Boston (2008-2013)



Brian



JihShi



Monica (4)



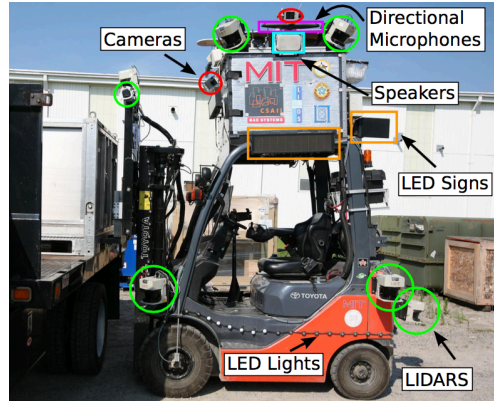
Chang-Yi (1)



Che-Min (1)

- Daniel Huang (2)
- Jerry Teng (1)
- Peter Hung
- Michael Su (1)
- Tony Hsiao (1)
- Eric Lu
- David Chen
- Yury Denisov
- Tim Victorio (1)

Mobility & Perception



Where am I?
Where am I going?
How should I get there?
What is around me?
What will happen next?
What should I do next?

- Challenges in Real-world Scenarios

Wearable and Assistive Robots

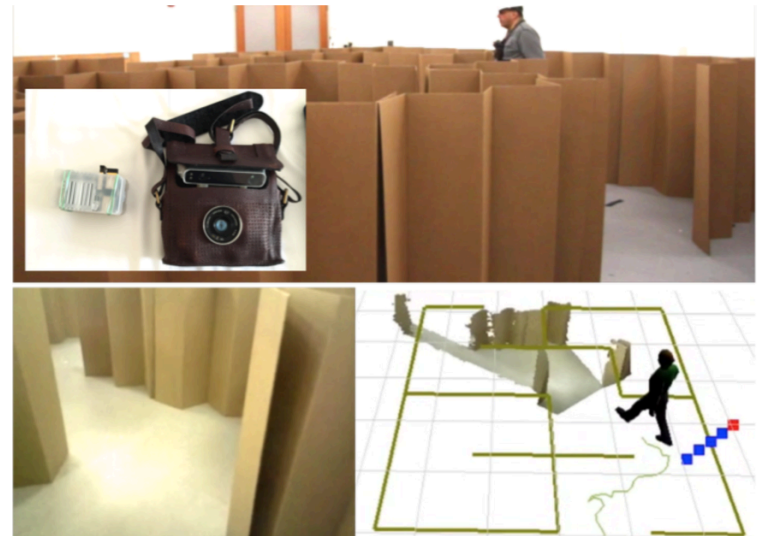


- What is around me?
- Where should I go next?
- How to find an empty chair?

- How to interact with human perception?

Two Papers in ICRA 2017

- **Duckietown: an Open, Inexpensive and Flexible Platform for Autonomy Education and Research (Liam et al., 2017)**
- **Enabling Independent Navigation for Visually Impaired People through a Wearable Vision-Based Feedback System (Wang et al., 2017)**

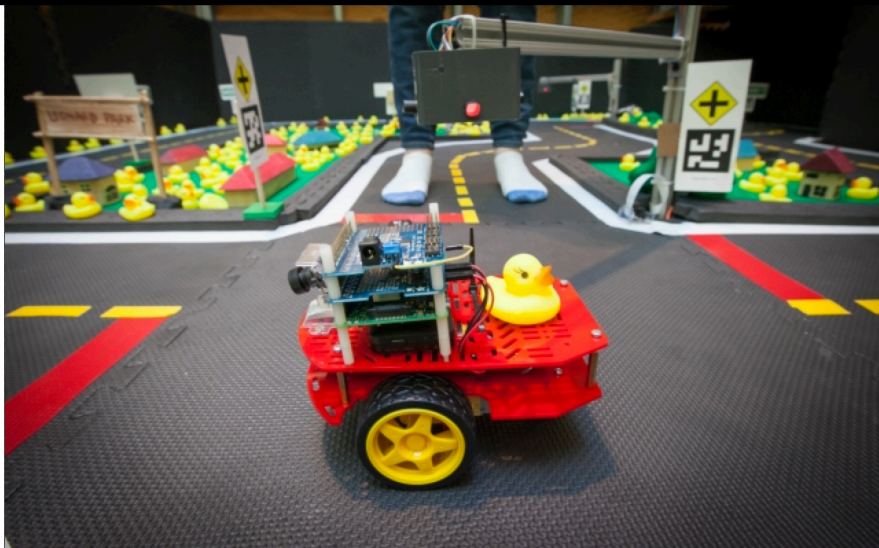


Focus: Autonomous Driving & Robotic Education

MIT News

Browse

or



Self-driving cars, meet rubber duckies

MIT News

ON CAMPUS AND AROUND THE WORLD

Browse

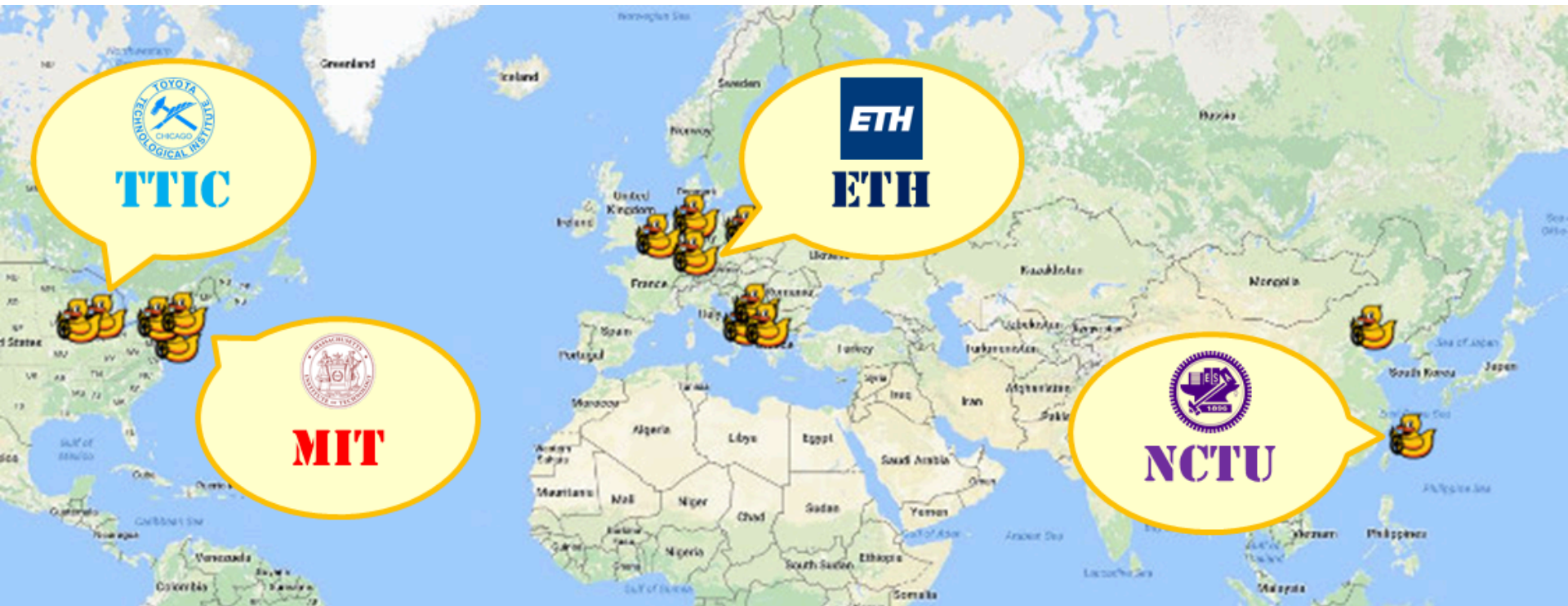
or

Search



CSAIL joins with Toyota on \$25 million center for autonomous cars

First Branch in the World: NCTU



Summer School
7/17-19

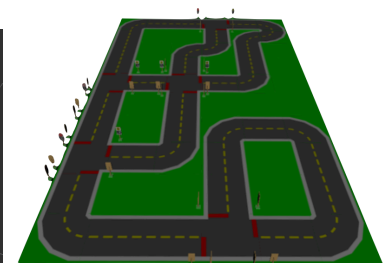
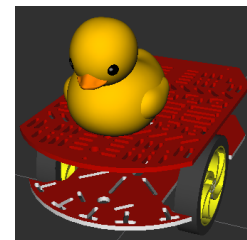
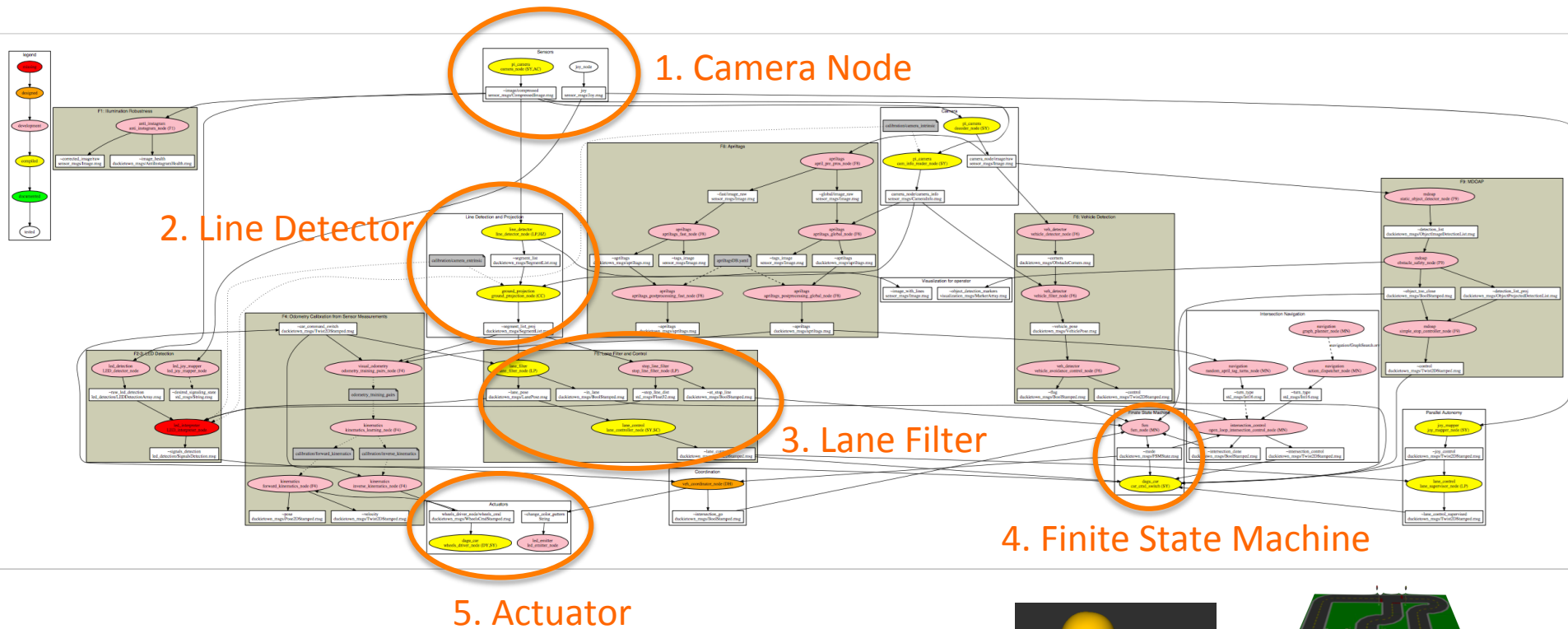
Creative Software Project
電機專題 2017 Fall

Duckietown
Competition

深碗學分
2018

Robotic Education

- ROS Package, Node, Message, Test, Rviz



Outreach: Inviting potential clients

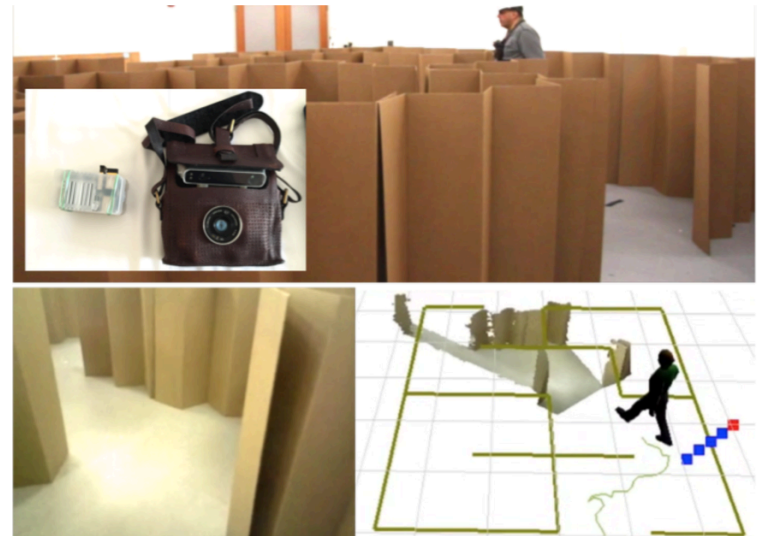
2016/09/26

- Our first client Mr. Chang, who is a blind user, came to our class to give us a talk.



Two Papers in ICRA 2017

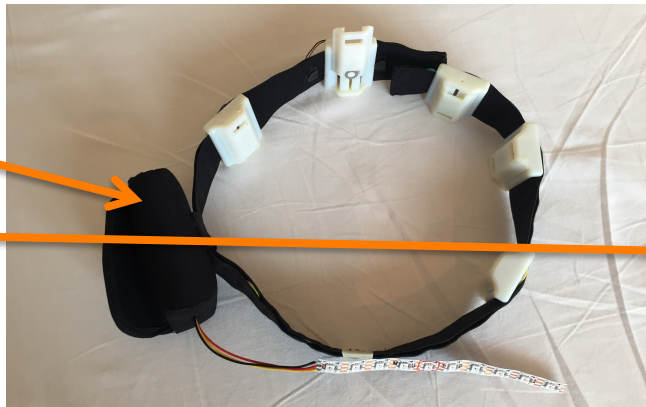
- Duckietown: an Open, Inexpensive and Flexible Platform for Autonomy Education and Research (Liam et al., 2017)
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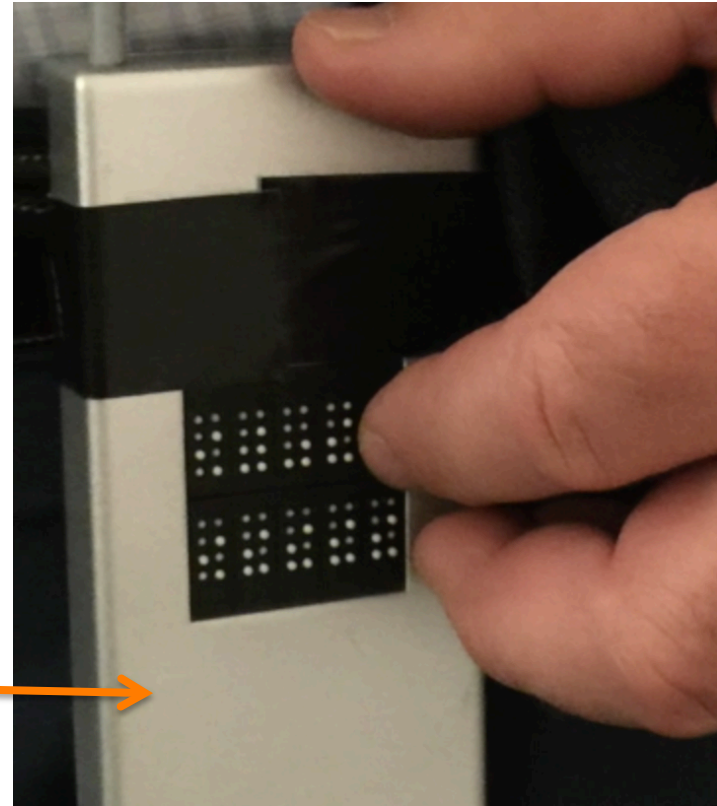




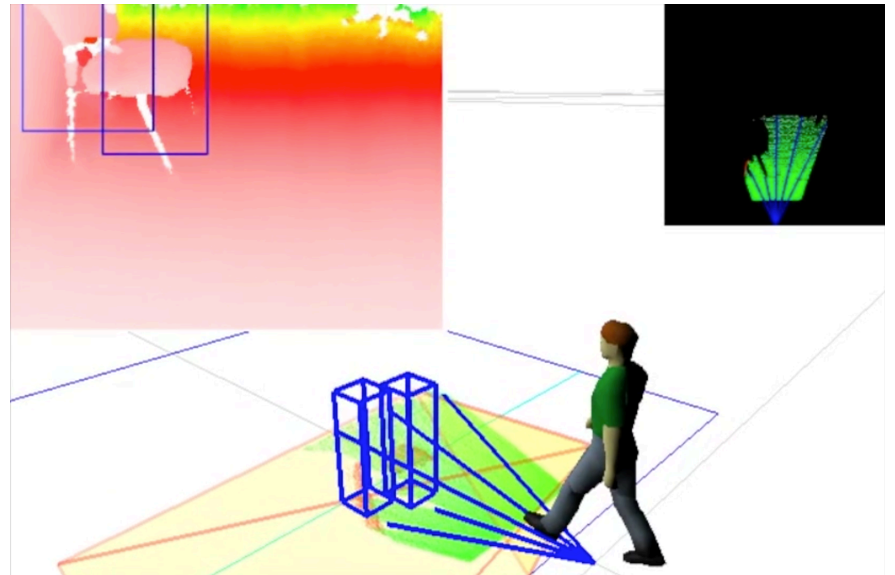
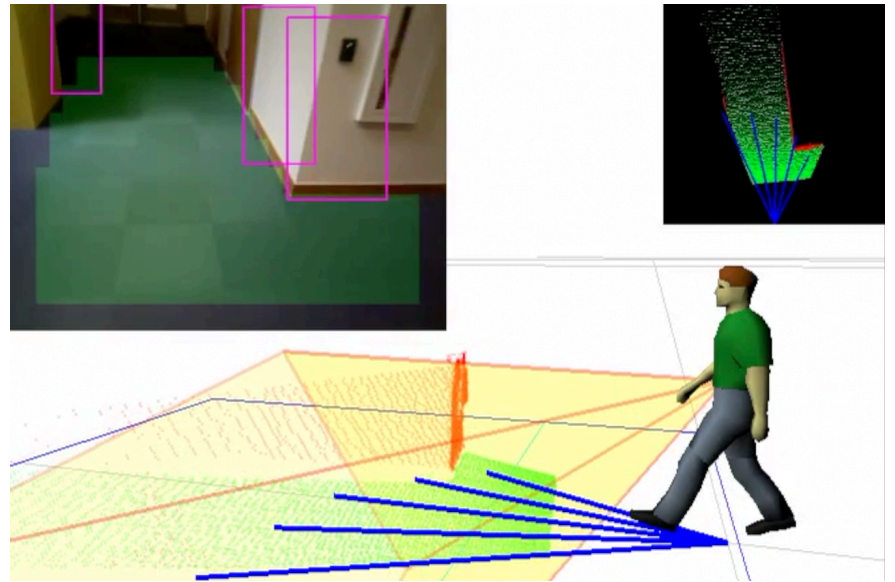
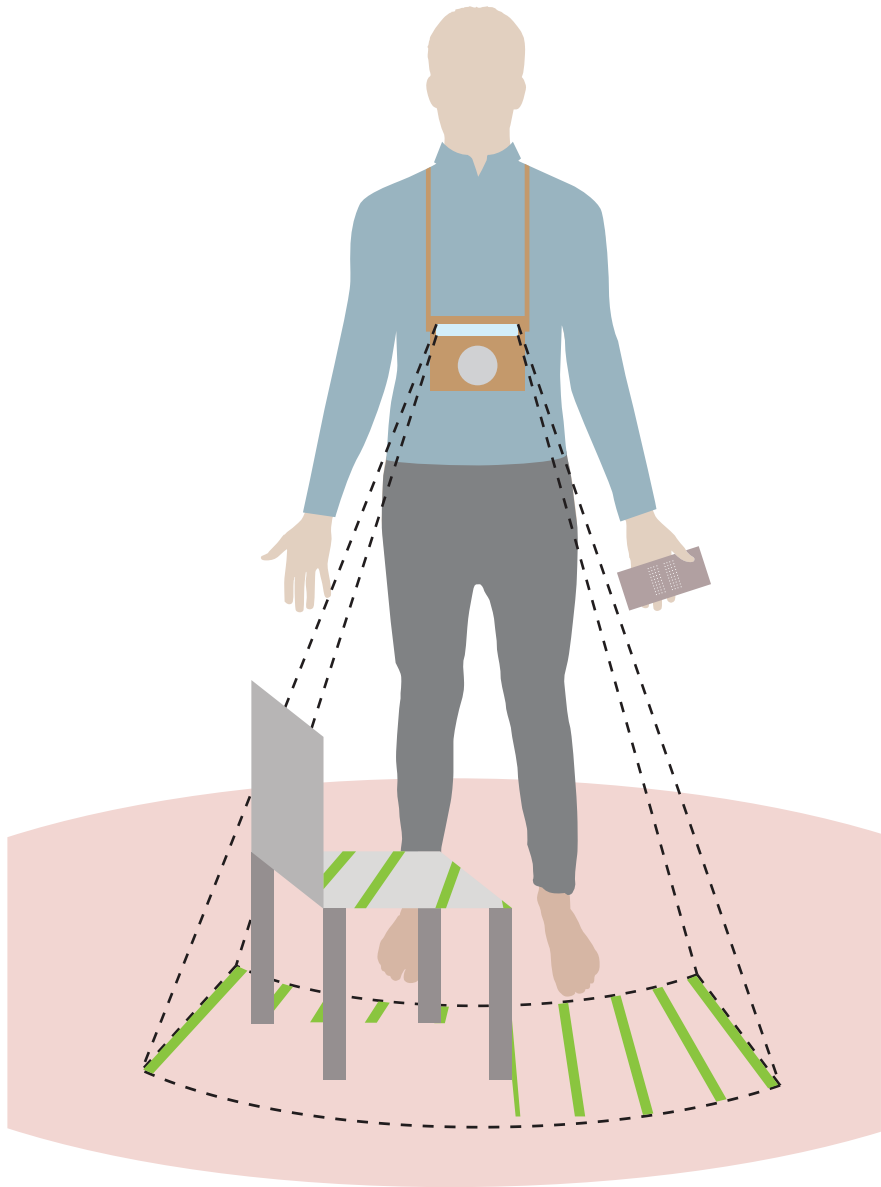
Depth Camera & Embedded Computer



Vibration Belt



Refreshable Braille







2x




On the News

White cane 2.0


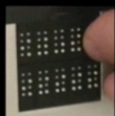

Helping blind people navigate

A new way to assist those with poor eyesight



 MIT News  

The system consists of:

-  a depth camera and computer
-  a refreshable braille display
-  and a haptic vibration belt

New algorithms power a prototype system for helping visually impaired users avoid obstacles and identify objects.

Courtesy of the researchers

Wearable system helps visually impaired users navigate

Device provides information from a 3-D camera, via vibrating motors and a Braille interface.

Thank You!

- Let's share our **luck** and **superpower** and *make the world a better place!*