LIVEWHEEL

Live Accessibility.
LIVEFREE+LIVEWELL
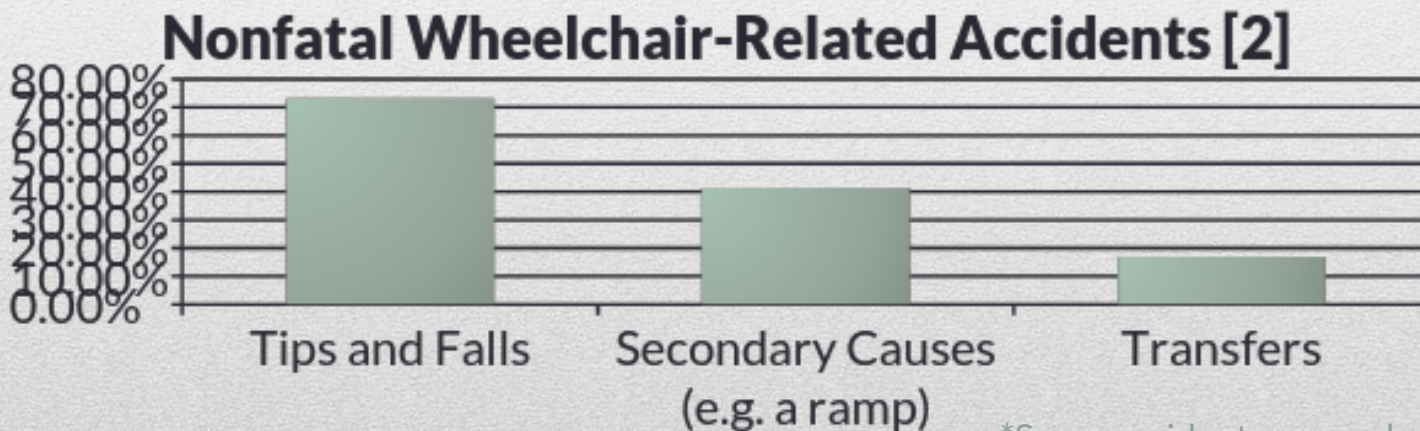
PENNVENTION 2016 SUBMISSION

JOSEPH GIDO | TIFFANY KO | VINCENT MORANO | WEI XIAO

- **Difficulty navigating safely in wheelchairs leads to significant medical and economic suffering each year**
  - "In the United States, an estimated yearly average of 36,559 nonfatal, wheelchair-related accidents occur that require emergency department attention." [1]
  - "Medical bills incurred in wheelchair-related falls, including rehabilitation, are often between $25,000 and $75,000," in addition to associated complications from time spent in hospital [1]
  - Two primary sources of tips and falls include traversing steep inclines and colliding with obstacles(e.g. curbs) [2]

Nonfatal Wheelchair-Related Accidents [2]

80.00%	
70.00%	
60.00%	
50.00%	
40.00%	
30.00%	
20.00%	
10.00%	
0.00%	

Tips and Falls   Secondary Causes (e.g. a ramp)   Transfers

*Some accidents were placed in multiple categories

The Problem

1: http://www.ncbi.nlm.nih.gov/pubmed/15839290
2: http://www.rehab.research.va.gov/jour/97/34/1/pdf/gaal.pdf

- **Wheelchair users in general**
  - From 1997 to 2010, the number of wheelchair riders in the United States grew from 1,411,000 [1] to over 3,300,000 [5]
- **Wheelchair users who don't have access to powered wheelchairs**
  - Manual wheelchairs typically cost $1,000, powered wheelchairs range from $3,000 to $30,000 [3]
- **Wheelchair users who don't use public transportation**
  - Four-fifths of wheelchair users report that their local public transportation system is difficult to use or to get to [4], despite being widely equipped for wheelchair accessibility [7]
- **20 and 40 year-old paraplegic wheelchair users**
  - Expected to live 65.5 and 68 years [NSCISC National Spinal Cord Injury Statistical Center]
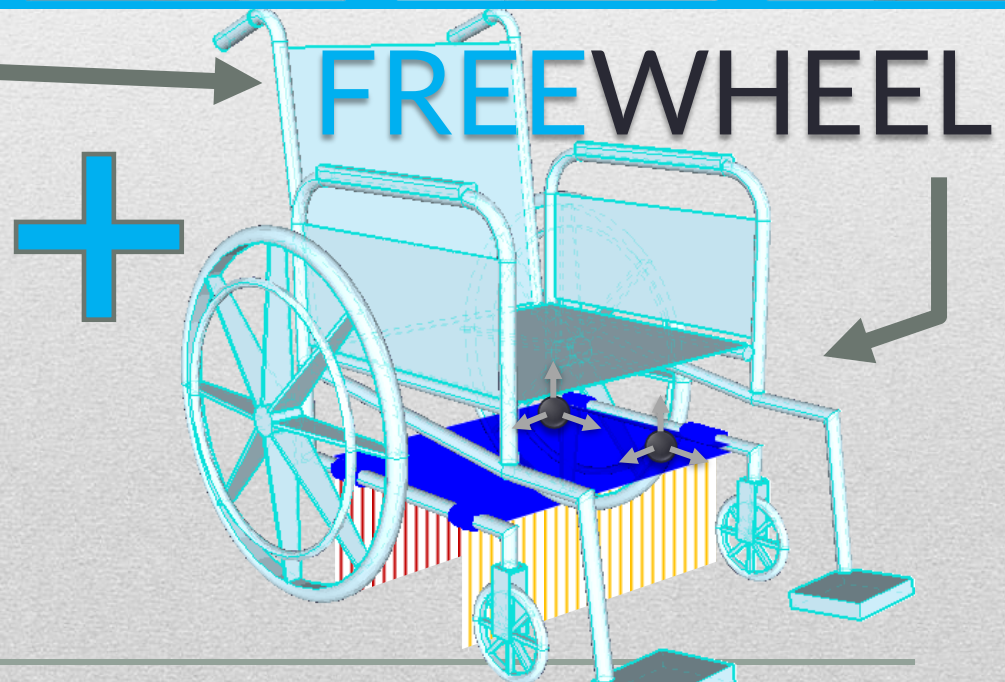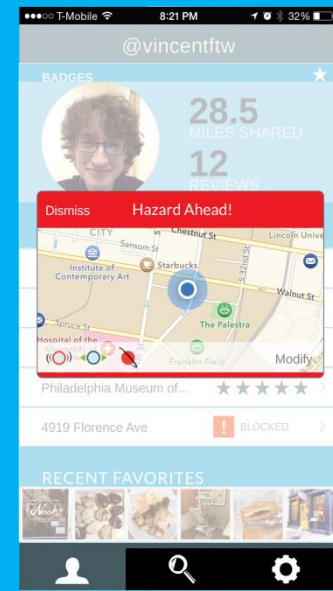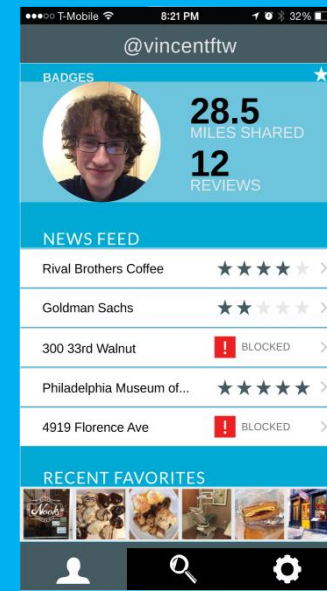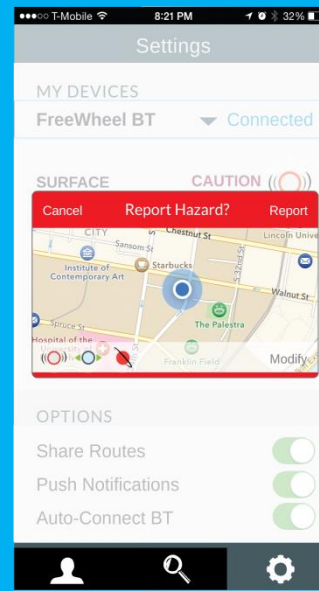- **Wheelchair users active in metropolitan areas**

The Market

3: http://curecmd.org/cmd-care/equipment/manual-v-power-wheelchairs
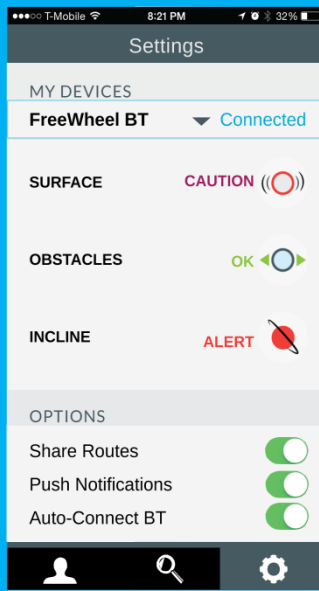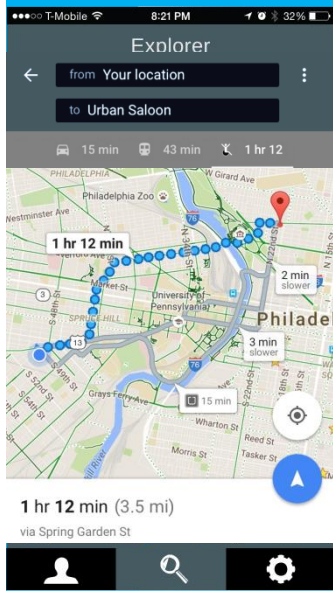4: http://www.disabled-world.com/disability/statistics/mobility-stats.php
5: https://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb10-ff13.html
7: http://www.apta.com/resources/statistics/Documents/FactBook/2013-APTA-Fact-Book.pdf

LIVE**FREE**
LIVE**WELL**
LIVE**WHEEL**

ACCESSIBILITY

COMMUNITY

SAFETY

FREE**WHEEL**

MODULAR, BLUETOOTH® LE – CONNECTED, ENVIRONMENTAL SENSING and REPORTING SAFETY SYSTEM

Development Timeline

PROTOTYPE
- FREEWHEEL HARDWARE
- LIVEWHEEL IOS APP

ALPHA TESTING
- PILOT GEO-TAGGING
- TESTFLIGHT ALPHA USERS

BETA TESTING
- APP STORE BETA USERS
- HARDWARE PACKAGING
- ONLINE WHEELPORTAL

- INCORPORATE
- BUILD AN ADVISORY BOARD

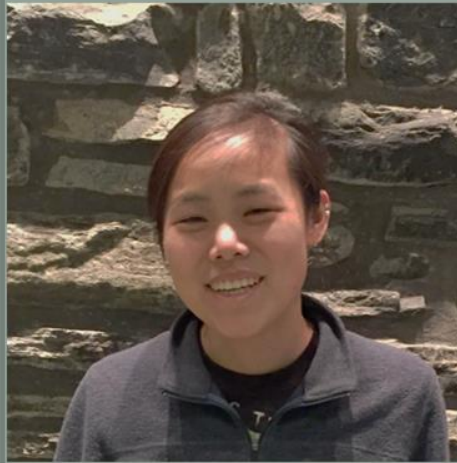## JOE GIDO

- Computer Science, BS '18
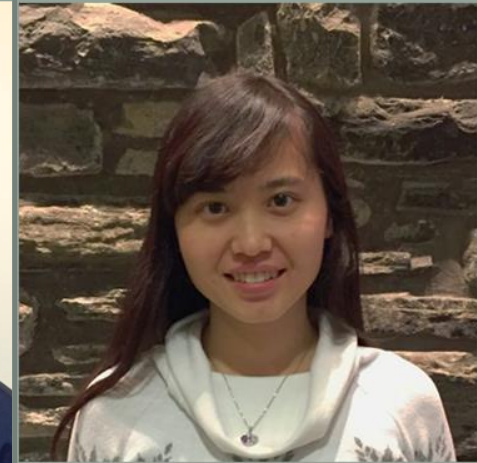- *Interested in using technology to benefit society.*

TIFFANY KO

- Bioengineering, PhD '18
- Bioengineering, MS '12
- Electrical Engineering, BSE '09
- *Passionate about addressing economic and health disparities using technology*

VINCENT MORANO

- Physics, BS '18
- *Excited to enhance community-based solutions using both software and hardware*

WEI XIAO

- Biotechnology, MS '16
- *Driven to improve the quality of life of others through technological advancement*

The Team