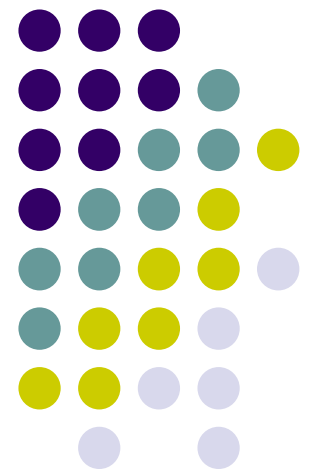


Ubiquitous and Mobile Computing

CS 403x: Tapping into the Vibe of the City Using VibN

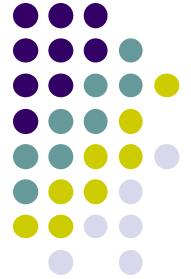
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Goal

- Utilize sensors in smartphones to characterize human activity
 - people, places, communities
- Provide contextual data on points of interest





Case example: CenceMe

- 20 users over 1 month in Hanover, New Hampshire
- Uses sensors to infer type of activity
- Example:
 - Computer Science department at Dartmouth is characterized by sitting

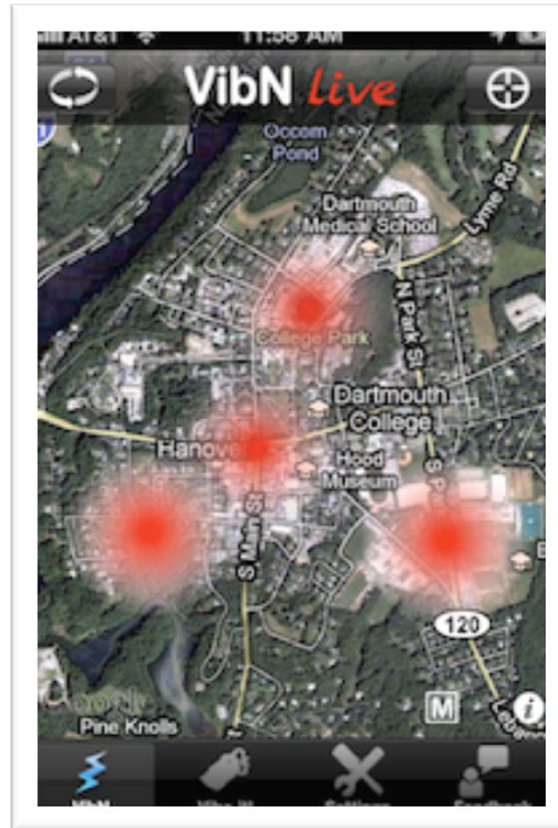
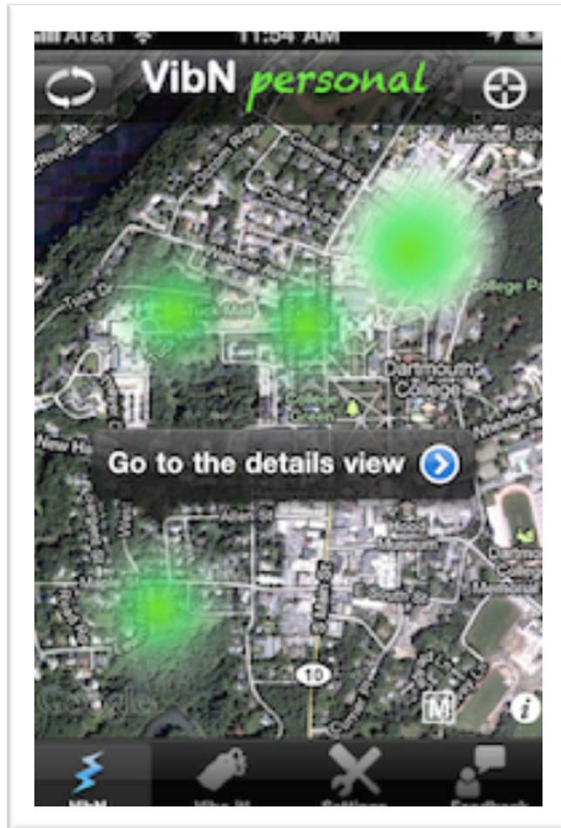


VibN

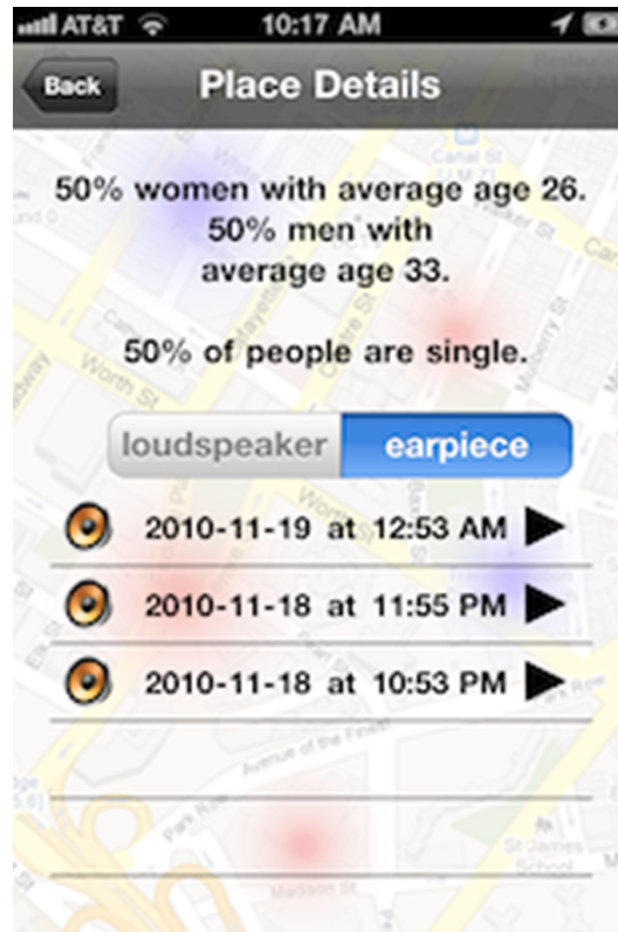
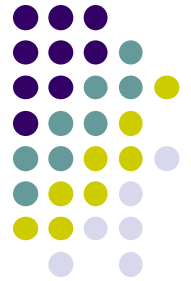


- Continuous sensing application running in the background on smartphones
 - accelerometer, audio, and localization sensor data
 - Voice data omitted
- Audio data can also be entered manually using *Vibe it! feature*
- Over 1000 users across Android and Apple app stores

Three data categories



See location-specific data



Application Design



- Location Data
 - If user is in certain location for > 30 minutes, begin tracking
 - If > 1 hour, location considered significant
- Audio sensing (2 types):
 - Automatically recorded audio - stripped of vocal data for privacy purposes
 - Vibe it! feature - User voluntarily records and uploads audio at specific point-of-interest

Challenges



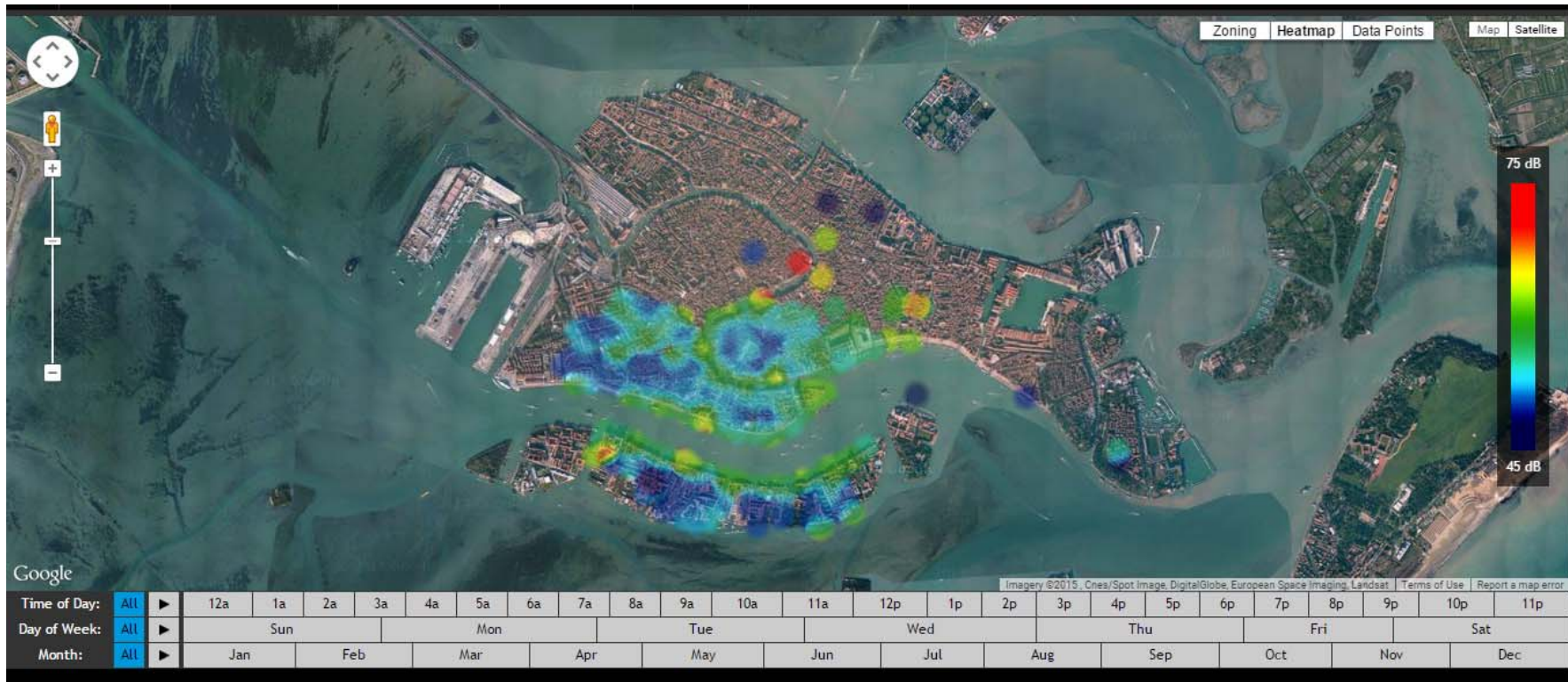
- Background accelerometer data on iOS
- User privacy
- User adoption



Potential Gains

- Research:
 - City planners could see how a space is used
 - See how locations change over time
- User:
 - What music is being played at a particular club right now, how many people are at the club and what are the demographics? Where is the quietest place in the city to read a book? How many people are jogging in the park right now, so that I won't be alone during my run today?

Related Work at WPI - VeniceNoise



Conclusions

- Unique idea to use audio
- Large initial user base
- Not much value to end users





References

- *Emiliano Miluzzo, Michela Papandrea, Nicholas D. Lane, Andy M. Sarroff, Silvia Giordano, and Andrew T. Campbell. 2011. Tapping into the Vibe of the city using VibN, a continuous sensing application for smartphones. In Proceedings of 1st international symposium on From digital footprints to social and community intelligence (SCI '11). ACM, New York, NY, USA, 13-18. DOI=10.1145/2030066.2030071 <http://doi.acm.org/10.1145/2030066.2030071>*
- <http://sensorlab.cs.dartmouth.edu/vibn/>