MAGIC WAND
Remote controller for web applications
vibhor.nanavati@sv.cmu.edu

Problem
Since 2003-04, we have seen an evolution of web to support applications like Google Maps or Gmail. During the same period however, we have seen no change (or very little change) in human interface devices.

With adoption of iPhone, Android and other smart phones, expectations of users have dramatically increased in how they interact with applications. Users can use various hand gestures or voice command to interact.

Can we bring a similar change to desktop users?

Inspiration
iPhone users are already used to two finger touch gesture to pinch zoom into a view.

Google Earth on iPhone and Android present to user a unique way to use the phone’s orientation sensor to change the view angle in a 3D view.

Outside of smartphone landscape, Onomy tiltytable demonstrate how a new age human computer interaction will look like.

Solution: Magic Wand
The proposed solution allows web application running in browser to pair and listen directly to smartphone sensors and let developer define the interaction.

Prototype: TiltyMap
• A custom web Application built using Google Maps API and Magic Wand framework.
• Controllable by Android device on the same network.
• Pan the map by using the gravity gesture,
• Use two finger gesture to scale the map.
• Voice commands to change map type or search a place on the map.

Framework & Architecture

Framework:
- Android app that runs Http server and publishes sensor data.
- Companion JS library that web apps include to use the sensor data.

Key Design Aspects:
- Use of a single long lived Http connection
- Data transfer protocol is JSON.
- Secondary channel for app to configure android.

Niche:
- Application specific controller UI.
- Application defined gestures
- Composition of sensor data.

Environment
The proposed solution allows web application running in browser to pair and listen directly to smartphone sensors and let developer define the interaction.

Prototype: TiltyMap
• A custom web Application built using Google Maps API and Magic Wand framework.
• Controllable by Android device on the same network.
• Pan the map by using the gravity gesture,
• Use two finger gesture to scale the map.
• Voice commands to change map type or search a place on the map.

Results
• A Java client library coming soon.
• Multiple controllers for same application.
• Touch gesture language.
• Open sourcing.

Roadmap
• A Java client library coming soon.
• Multiple controllers for same application.
• Touch gesture language.
• Open sourcing.

Challenges:
• Browsers don’t have access to bluetooth service.
• No browser API for sensory outputs from phone.
• Browsers don’t allow listening on a socket.

Goals:
• Low latency response time.
• Install once, use anytime, anywhere.
• Allow modes for existing use cases.

Sincere thanks to Ted Selker, CMU Silicon Valley for letting me pursue this idea as part of Smartphone course.