Using Tizen in Student Projects - Initial Experiences

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TIZEN™ DEVELOPER CONFERENCE 2014 SAN FRANCISCO

Overview

- Background
- Student Project Examples
- Experiences
- Ongoing and Future Work

Background

Courses

- **CSC-484 W14: User-Centered Design and Development**
  - Introduction to UCD, UX, HCI
  - Quarter-long team project; students can select from a set of pre-defined projects (some with external partners) or propose their own
- **CSC-581: S14 Knowledge and Usability**
  - Graduate level combining aspects of knowledge-based systems and HCI/UX
  - Focus on two parts: research presentation + paper, team project
- **CPE/CSC-453: S14 Operating Systems**
  - Consideration of Tizen for lab assignments
  - Practical issues with the development environment

Student Background

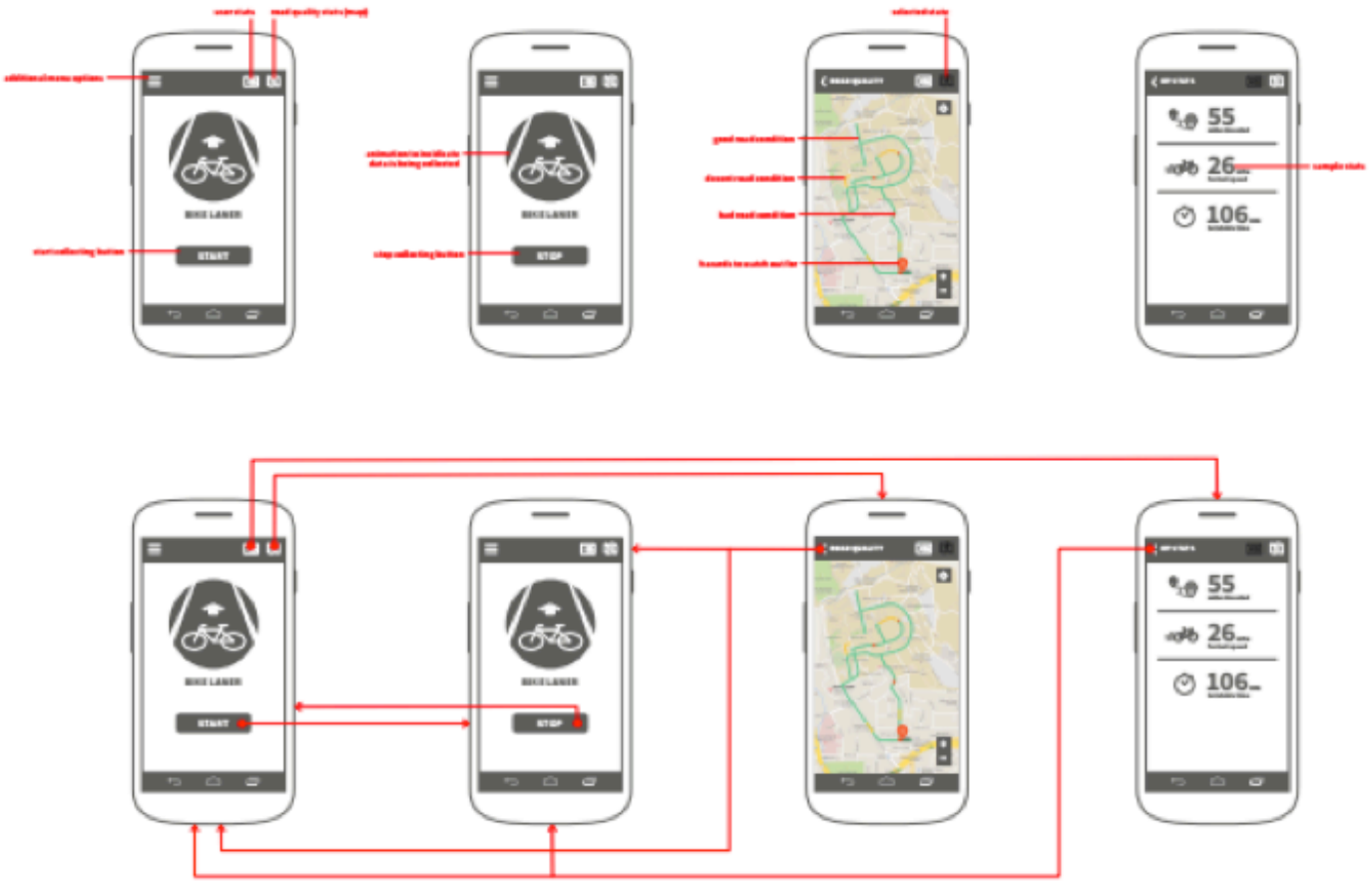
- **Almost all are Computer Science, Software Engineering or Computer Engineering majors**
  - Junior, senior and graduate students
- **Strong programming skills**
- **Varying levels of mobile development experience**
- **Good background in team-oriented work**
  - going back as far as their first quarter
- **Focus typically on functionality, not usability**


Student Project
Samples

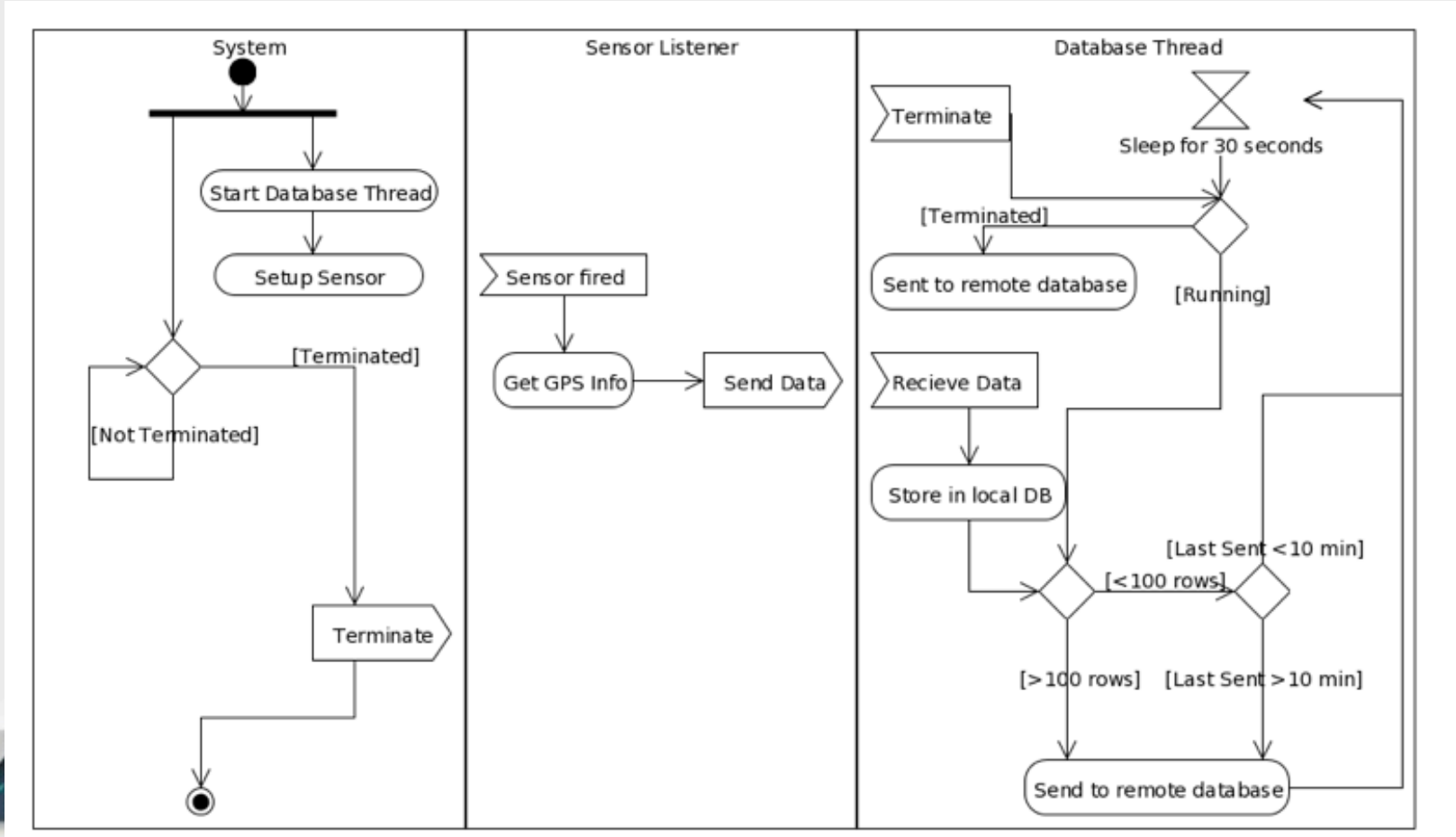
CSC 484 Team 2: BikeLaner

- **Bike lane surface mapping with mobile devices**
- **Utilizes accelerometer data in smart phones**
  - initial implementation attempted on Tizen
  - switched over to Android due to difficulties retrieving and processing accelerometer data
  - proof of concept showed feasibility for devices mounted on the bike, carried in pants pocket, or in a backpack
- **Future plans**
  - crowdsourcing to accumulate reliable data about bike lanes
  - integration with Strava, MapMyRide, Garmin Training Center and similar

BikeLaner Screens



BikeLaner System Activity Diagram



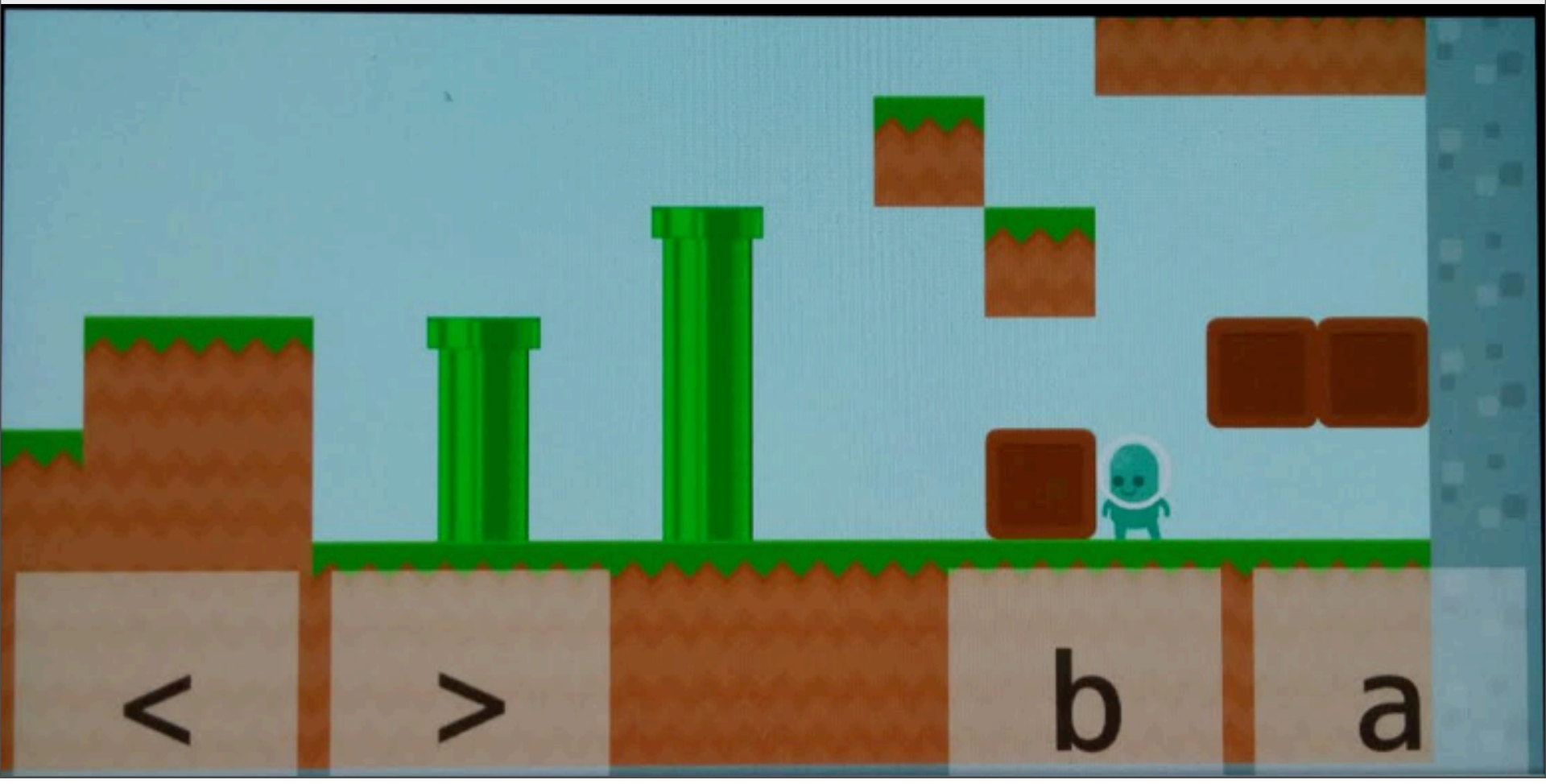
CSC 484 Team 4: StickySpeech

- **Voice to text note taking app**
  - initial implementation attempted on Tizen
  - switched over to Android due to difficulties with the speech to text conversion API
  - working app with decent accuracy (dependent on the underlying speech to text functionality)
- **Future plans**
  - continuation in CSC 581-S14 with an emphasis on supporting hearing-disabled students in classroom settings

CSC 484 Team 5: Memories Lost Platformer Game

- **Mario-style game implemented in HTML5 and Quintus/enchant.js**
  - implementation initially attempted as native Tizen app
  - switched over to Web browser due to problmes loading external JavaScript game engines such as enchant.js and Quintus in Tizen due to difficulties with the speech to text conversion API
  - functional implementation on multiple browsers
- **Future plans**
  - considering commercialization after porting to iOS, Android

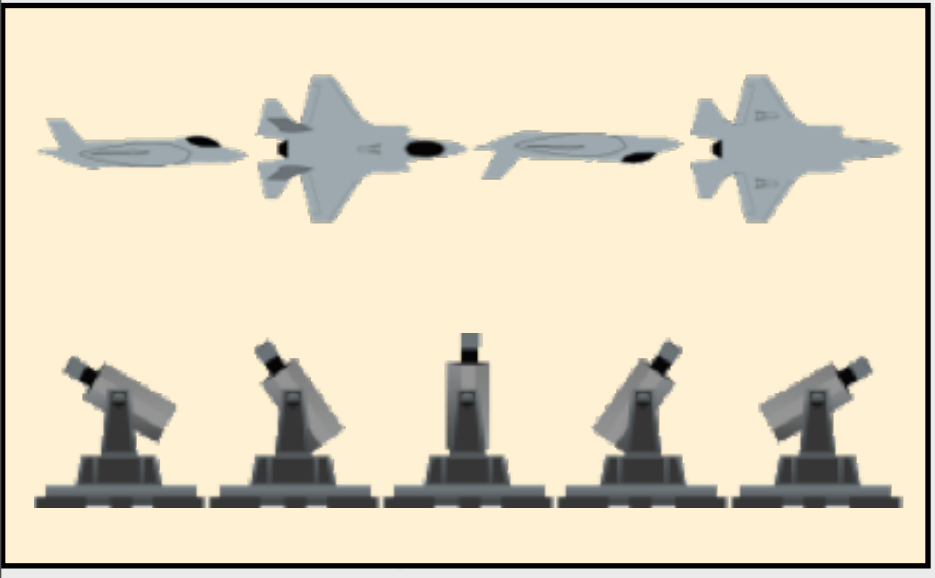
Memories Lost Screenshot

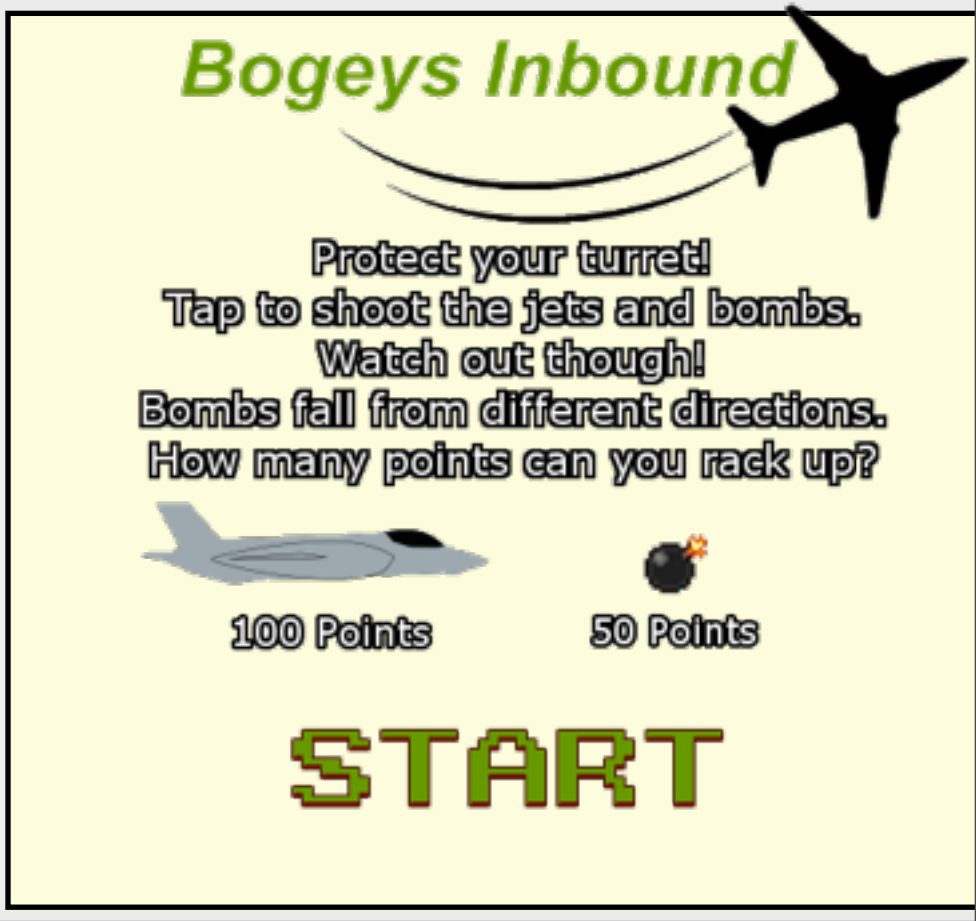


CSC 484 Team 7: Bogeys Inbound Turret Defense Game

- **Shoot down enemy planes before they blow you up**
  - implementation using HTML5, CSS, enchant.js on Tizen
  - functional implementation on multiple platforms and browsers
- **Future plans**
  - considering commercialization after porting to iOS, Android

Bogeys Inbound
Screenshots and Assets





CSC 484 Team 8: SnapBack! Tizen Messaging App

- **Ephemeral instant messaging app**
  - user sends an image that will delete itself after a set time period
  - the app also records the reaction of the recipient and sends it back to the user
  - implemented on Tizen using HTML5, CSS3, JavaScript
  - switched over to Android due to difficulties with the speech to text conversion API
  - working app with decent accuracy (dependent on the underlying speech to text functionality)
- **Future plans**
  - unclear; possible port to iOS, Android

CSC 484: Other Projects using HTML5, CSS, JavaScript

- **Chat Bot CSC Department**
  - front end for an interactive agent to provide information about the dept.
  - speech to text conversion problems caused a switch from Tizen to Android
- **NextIntent Estimation Software**
  - app to estimate time and cost for a complex machining job
  - validated on Tizen; no significant problems
  - usability low on smartphones, better suited for tablets

CSC 581: Real-Time Lecture Capture

- **Continuation of CSC 484 Team 4: StickySpeech**
  - recording lectures and converting speech to text in real time
  - intended to support students with hearing problems
  - implementation in HTML, CSS, JavaScript
  - plugin for Chrome due to the availability of speech to text functionality and wide user base
  - internal use at Cal Poly's Disability Resource Center
  - publication via the Chrome Add-on Marketplace

Experiences

Experiences

- **Tizen OS**
  - easy to get familiar with
  - very limited availability of apps
  - some functionality and usability issues
- **HTML5, CSS, JavaScript**
  - excellent starting point for cross-platform, browser-based mobile software
  - some performance and functionality issues
  - availability of libraries for various domains (Quintus, enchant.js, Famo.us)
- **Tizen Support**
  - strong reliance on Web site
  - encouragement to engage with the developer community largely did not succeed


Ongoing and
Future Work

CSC/CPE 453 Operating Systems

- **Tizen lab assignments**
  - development of two versions of an app: one resource-intensive, one light
  - smart launcher that chooses the appropriate version under certain circumstances (memory or battery low => light, otherwise full)
  - the limitation of the Tizen development tools to Ubuntu may be a problem

Senior Projects and Independent Studies

- **“My Cool Trip” app**
  - travel journal that records GPS locations, cities, landmarks
  - may include pictures, notes, voice memos, video taken during the trip
- **Continuation of W14, S14 class projects**
  - most senior projects start in the Fall or Winter quarter
- **Games**
  - lightweight games in HTML5, CSS, JavaScript
  - use of frameworks and libraries
- **Tizen on wearable devices**
  - strong student interest

Global Game Jam 2015

- **Development of games in HTML5, CSS, JavaScript**
  - Tizen devices available for checkout
  - considered for GGJ 2014, but the devices arrived just before the event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