Using Tizen in Student Projects - Initial Experiences

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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
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

System

Start Database Thread

Setup Sensor

[Not Terminated]

[Terminated]

Sensor Listener

Sensor fired

Get GPS Info

Send Data

Receive Data

Store in local DB

[Terminated]

[Running]

[Terminated]

DATABASE THREAD

Sleep for 30 seconds

Sent to remote database

[Last Sent < 10 min]

[< 100 rows]

[Last Sent > 10 min]

[> 100 rows]

Send to remote database

Terminate

Store in local DB

Monday, May 26, 14
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 problems 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
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

Protect your turret!
Tap to shoot the jets and bombs.
Watch out though!
Bombs fall from different directions.
How many points can you rack up?

100 Points
50 Points

START
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

- **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