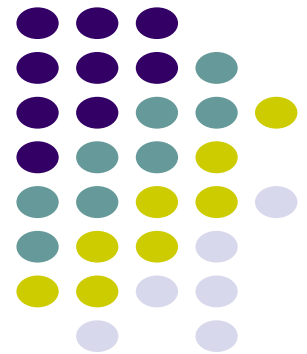# Ubiquitous and Mobile Computing
CS 403X: Random Encounter Simulator

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Problem Statement

- Current entertainment media does not require players to be physically active.

- Around 25% of adults are not active at all.

- 60% of adults don't get a recommend amount of daily physical activity.

Problem Statement

- How do we increase real world exploration?

- How do we increase physical activity?

something fun, entertaining, and exciting

RES Related Apps

- Ingress
- Zombies, Run!
- Pokemon Go

Random Encounter Simulator [RES] Vision

- Turn-based combat game
- Random encounters based on GPS coordinates and step counter
- Character customization
- Varying encounter rates based on explored zones
- In depth combat system that requires strategy and planning
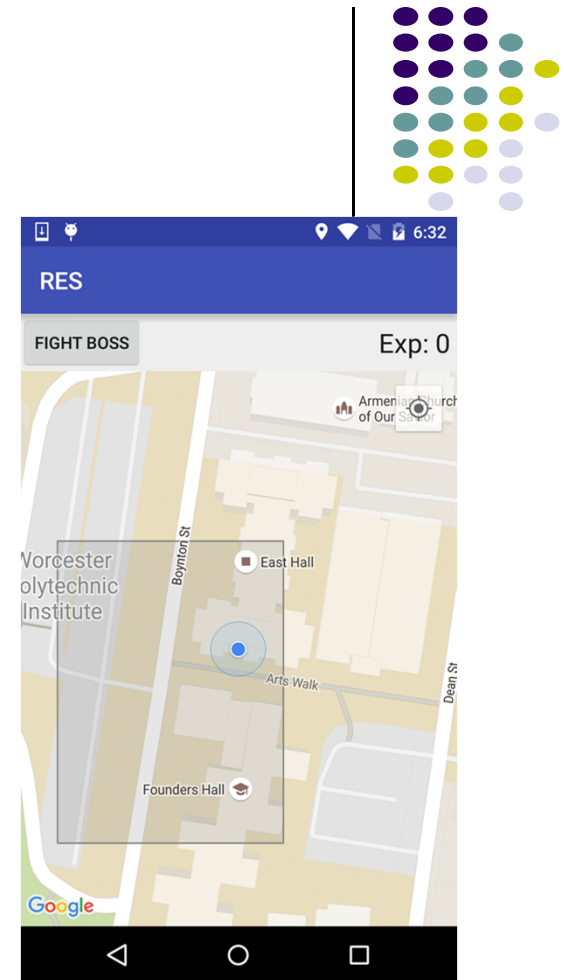 - Fighting monsters must be rewarding

RES Methodology and Implementation

- Zone and exploration map
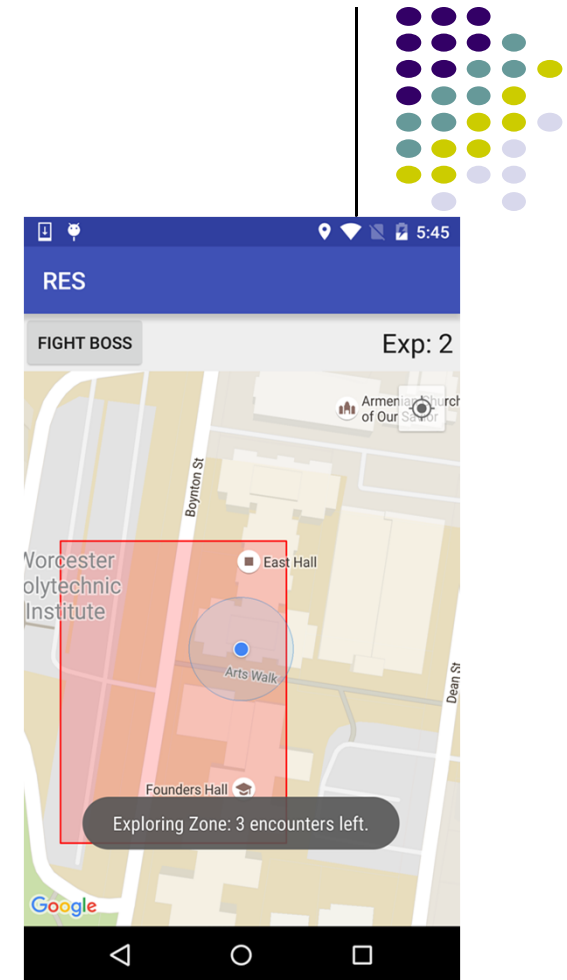- Basic Random encounter battle
- Boss battle

RES: Zone and Exploration Map

- Unexplored, conquering, and conquered zones displayed on map (Google Maps API)
- GPS data (Android.Location) is combined with the step counter data (Sensor.TYPE_STEP_DETECTOR) to trigger random encounters
- Zones defined by Longitude and Latitude subsections.
- Zone data stored in local SQLite database
  - Longitude/Latitude
  - Number of encounters

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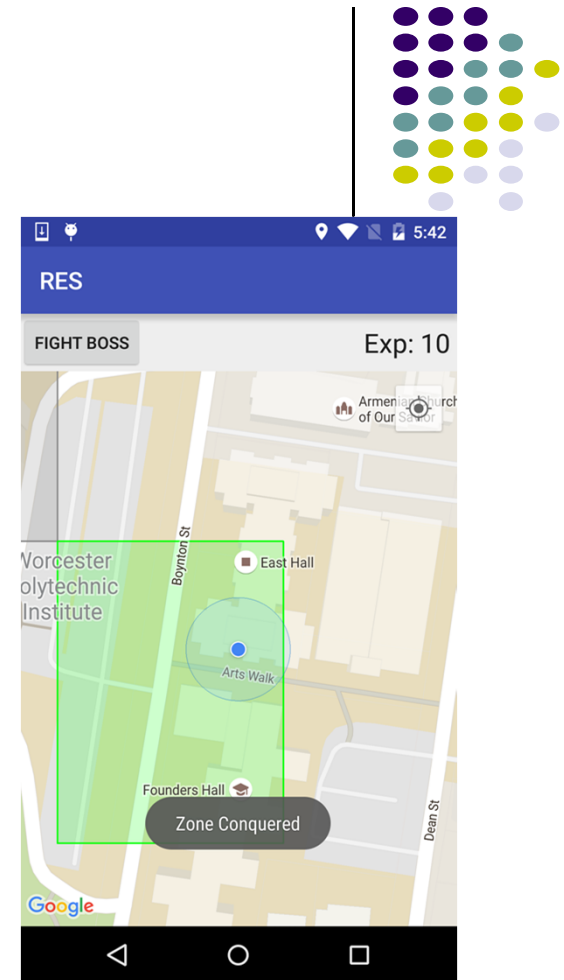 - Number of encounters

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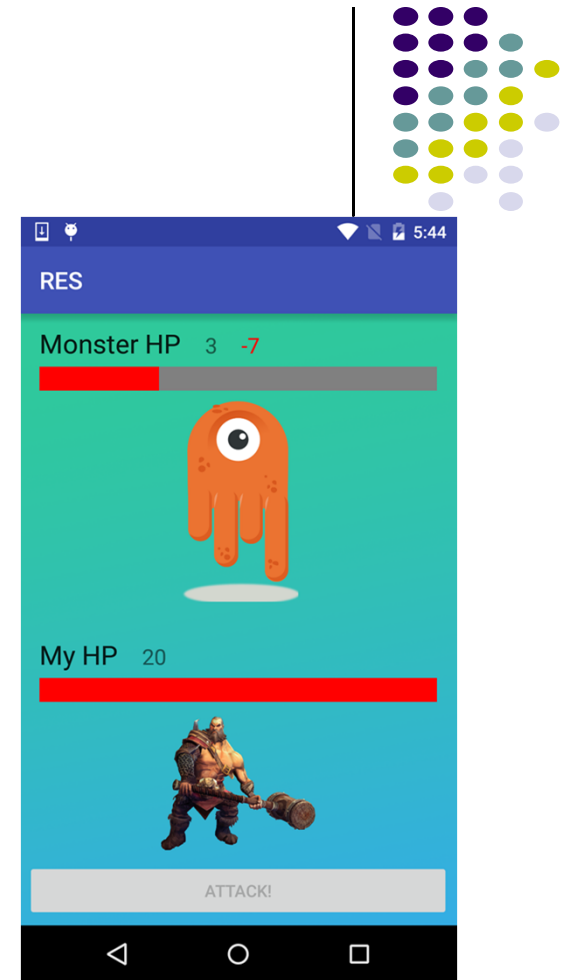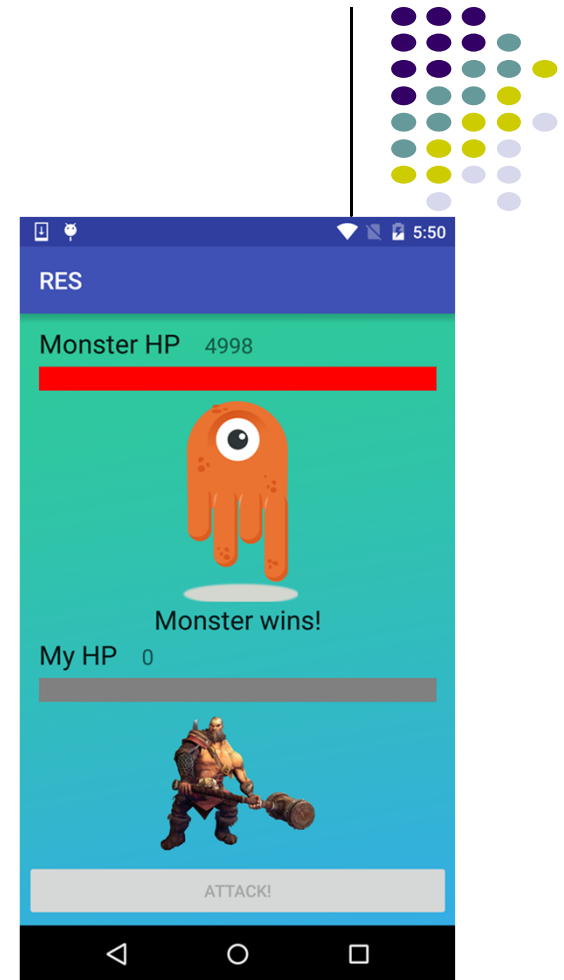 - Number of encounters

RES: Random Encounter Battle

- Simple turn-based combat played on phone
- Both avatar and monster have health
- Take turns attacking
- Kill the monster before it kills you
- Implemented with standard android UI widgets

RES: Boss Battle

- Similar to encounter battle
- Much more difficult
- Implemented with standard android UI widgets

Evaluation and Results

- Asked test participants subjective questions about the app's ease of use, fun-factor, and motivation factor

Feedback:

- Battle UI is intuitive, map UI requires tutorial
- The app in its current state is boring, but the concept is exciting
- If the game mechanics were more fleshed out, the app would definitely encourage outdoor exploration

Future Work

- Make more robust combat system
  - Add loot drops
- Add Tutorial
- Add story
- Add more enemy types

References

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4358950/

The dangers of inactivity

http://www.statisticbrain.com/exercise-statistics/

Adult inactivity statistics

https://www.ingress.com/

Ingress

https://zombiesrungame.com/

Zombies, Run! (game)

http://www.pokemon.com/us/pokemon-video-games/pokemon-go/

Pokemon Go

https://en.wikipedia.org/wiki/Pok%C3%A9mon_GO#/media/File:Pokemon_Go.png

Pokemon Go Logo