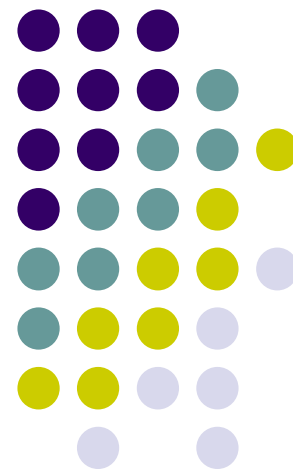


# Ubiquitous and Mobile Computing

## CS 528: *Let it Goat*

Matthew McMillan, JP Bulman,  
Matthew Kaminski,  
Weixi Liu, Chao Wang

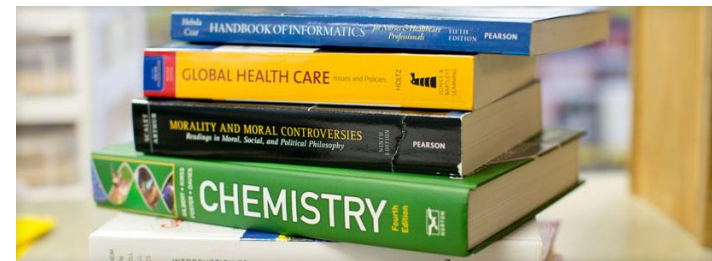
*Computer Science Dept.  
Worcester Polytechnic Institute (WPI)*





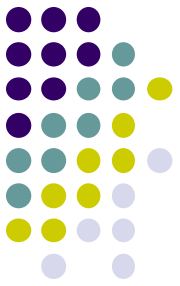
# What problem this tackles

- Students buy expensive class materials
  - But it is only used for a single term
  - Even things like apartment furniture
    - Lifespan is longer than a year
- Now students can resell
  - Make some money back
    - Whilst helping other students buy at discounted prices
  - Safer - on campus



# Related Work

- Letgo allows you to buy and sell locally. From vintage clothes, antique furniture to used books and retro games.
- OfferUp let you know who you're dealing with and message buyers and sellers securely from within the app.
- Decluttr is mostly for selling your CDs, DVDs, games, books and tech.





# Importance

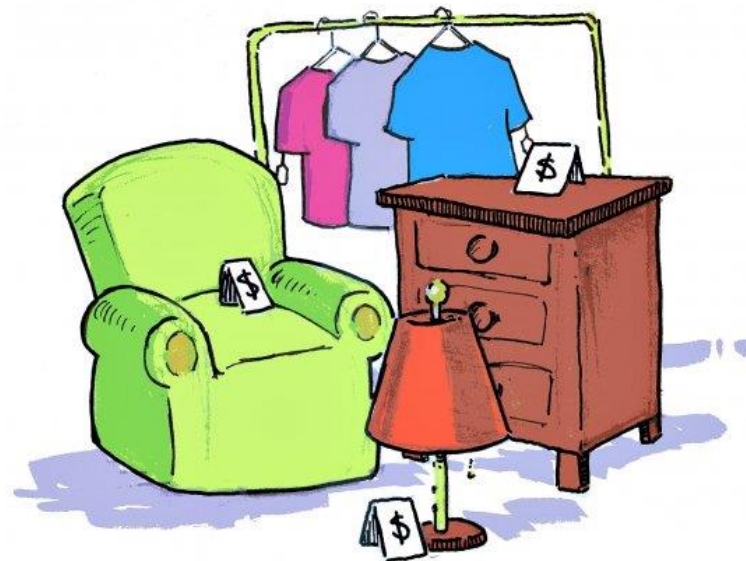
- Students need to sell their used things and buy another what they need, such as books, electronics, or utensils.
- Current solutions, like Craigslist, can be unsafe and with total strangers.
- Our app spend students less time to sell & buy in campus. It will suggest 'safe' locations only for WPI students



# Solution



- Let it Goat will provide a unified place to buy and sell items for both departing and soon-to-arrive students




# Solution



- This app will allow students to buy and sell items using their existing WPI account

A screenshot of the Worcester Polytechnic Institute Central Authentication Service (CAS) login page. The page features the WPI logo and name at the top. Below the header is a red horizontal bar. The main content area is titled "Central Authentication Service (CAS)" and contains a login form on the left and a security warning on the right. The login form includes fields for "Username:" and "Password:", a checkbox for "Warn me before logging me into other sites.", and "LOGIN" and "clear" buttons. The footer contains copyright information and links for "Feedback & Questions", "Legal & Trademark Notices", and "Privacy Statement".

 Worcester Polytechnic Institute

### Central Authentication Service (CAS)

Enter your Username and Password

Username:

Password:

Warn me before logging me into other sites.

For security reasons, please exit your web browser when you are done accessing services that require authentication!

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# Solution



- Let it Goat will suggest safe locations on campus to perform the transaction



# Implementation Plan (Big Picture)



## Programming Languages:

- Front-end: Java & Kotlin
- Back-end: Java || Python || Node.JS

**Database:** MongoDB

**Platform:** Android Studio

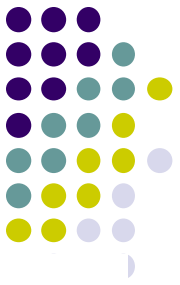
**Web service:** Amazon Website Service

## Authentication:

- Microsoft Azure Single Sign On (SSO)
- or Central Authentication Service (CAS)
- or crawler from [bannerweb.wpi.edu](http://bannerweb.wpi.edu)







# Implementation Plan (Details)

## Android Modules may use:

- Activity & Fragment
- RecyclerView
- MediaPlayer
- mongodb:stitch-android-sdk
- com.google.android.gms:play-services-location
- ...



## Database

- MongoDB Atlas
  - MongoDB Stitch Application





# Timeline

Nov. 7

- Mock-ups finished
- Basic home screen for buying items started
- Database for items being sold on the market started

Nov. 14

- User database created
  - A few admin logins added to table
- Populate home/buying items screen
  - Put dummy items in DB table

Nov. 21

- User login works
  - Makes sure they have a @wpi.edu email



# Timeline



Nov. 28

- Selling item view created
  - Adds items to DB

Dec. 5

- Pickup location feature added
  - Use geofences to make sure both people are in a WPI building

Dec 12

- User interviews conducted
  - Get a rating on different features
- All desired features have been implemented
- Paper written

# HOME

Hand-drawn mobile app home screen layout:

- Search Bar:** Located at the top, containing a magnifying glass icon, the text "Search", and a plus sign icon.
- Recommendation Header:** A banner with the word "Recommendation" written in a colorful, hand-drawn font.
- Product Grid:** A 2x2 grid of product images:
  - Top-left: A computer monitor displaying a landscape scene.
  - Top-right: A collection of sports equipment including a tennis racket, a basketball, a baseball bat, a soccer ball, and a football.
  - Bottom-left: A stack of books on a red surface, with the text "00 x 1800" in the bottom-left corner.
  - Bottom-right: A blue armchair next to a small wooden side table with a plant.
- Bottom Navigation Bar:** Three tabs labeled "Home" (in red), "Message" (in green), and "User" (in purple).

# ITEM

Hand-drawn mobile app item detail screen layout:

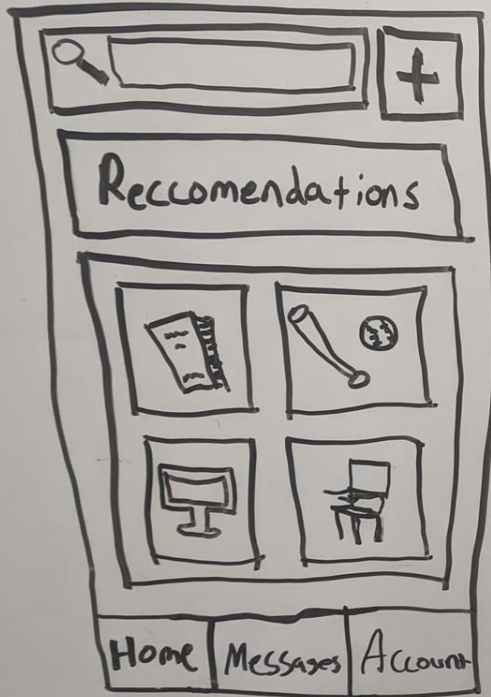
- Image/Video Section:** A box containing the text "Images or Videos" and a right-pointing arrow.
- Price:** A large "\$/00" symbol in a colorful, hand-drawn font.
- Product Information:** A box containing the text "Product information".
- Progress Indicators:** A row of five circles, with the first one filled black, indicating the current section.
- More Product Information:** A box containing the text "More product information" and a downward-pointing arrow.
- Related Products:** A box containing the text "Related products" and a right-pointing arrow.
- Progress Indicators:** A second row of five circles, with the first one filled black, indicating the current section.
- Bottom Navigation Bar:** Three tabs labeled "Home" (in red), "Message" (in green), and "User" (in purple).



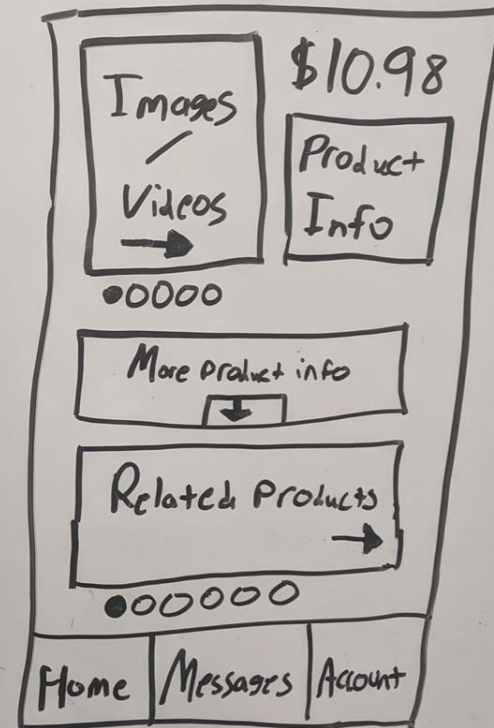
# Mockup



## Home

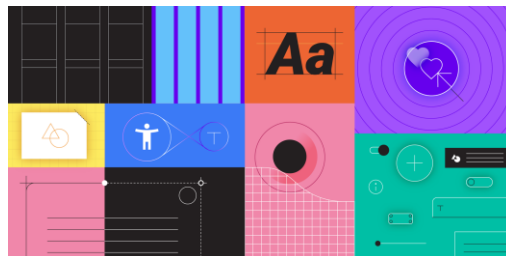
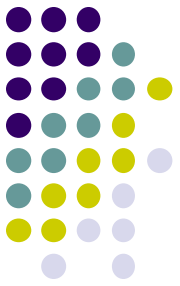


## Item



# Evaluation

- Focus groups for user testing
- Simulate scenarios for users
- Surveys to ensure important features are included
- Ensure Google's UI Guidelines are followed





# Points Tally

4 points: 5 android screens

4 points: Playback audio/video

4 points: Location sensing

4 points: Taking pictures with camera

6 points: Geofencing

10 points: Machine Learning

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32 points total

# Questions?







# References

- <https://code.tutsplus.com/tutorials/how-to-use-mongodb-stitch-in-android-apps--cms-31877>
- <https://developers.google.com/maps/documentation/android-sdk/start>
- <https://docs.microsoft.com/en-us/azure/active-directory/manage-apps/what-is-single-sign-on>
- <https://material.io/design/introduction/#principles>
- <https://offerup.com/>
- <https://www.letgo.com/en-us>
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