I’ve created the following list of ideas as starting points for your semester projects. These ideas tend towards projects for which 1) there is a known or likely customer who would like to have such an app, 2) the app has some “wow” factor because it could have some impact on civic or social issues, or university life, and where appropriate, 3) the app creates and/or uses large publicly-available data sets, such as that found at data.gov, that are stored/retrieved from off the network.

Remember, that these projects are only starting points. You will need to flesh out many specifics in order to come up with your actual project. Feel free to suggest other ideas to me, but do by Sep. 20th, because we need to get teams assigned and get the projects underway.

Please read over the following list of ideas. With your team member(s) choose your top 3 choices and email them to me by Fri. Sep. 23th, 2011.

1. IRememberUMD.
   Story project for alumni at homecoming. You will need to record people’s short audio recollections about specific locations on campus. You will need to collect information such as year covered by the recollection, the specific location, etc. and all allow tags (“romance”, sports, night-life, etc.) to be added to these recollections.
   Later, users of your app can specify certain tags, dates, etc. and as they walk around campus they can listen to the recollection when they arrive at the location with the recollection.

   Home energy meters such as the TED 5000 are cheap and web-accessible.
   Your app will allow people to monitor and interact with the TED 5000 data. It will also collect data and help users reduce their energy consumption.
   See http://challenge.gov/DOE/178-america-s-home-energy-education-challenge

3. UMD Paratransit Services.
   UM DOT has an on-demand bus service for students with permanent disabilities. There are multiple steps involved to sign up and to get service. Users, for example, can request a bus at a specific time and place, but then have to call to confirm one hour before.
   Your app should assist Paratransit users in managing their sign-up process, bus request, confirmation, and feedback processes.
   You should also consider special user interface approaches based your customer community (i.e., low sight, hard of hearing, limited fine motor control, etc.)

   Your app will allow users to tag buildings on campus with text messages. Other users can point the phone towards a building and then see on the screen text messages that have been placed there by other users. Start with simple posts, such as the name of the building and upcoming events and then extend the messages to general users. You will have to think about how to deal with large numbers of messages, with profane or indecent posts.

5. Peripatos.
   Aristotle taught while strolling with his students. Your app will allow a professor to attach homework questions to physical locations. The questions are viewed and can be answered by students only when the student is in physical proximity to the question’s location.
   Project case study. PLSC253 Woody Plants for Mid-Atlantic Landscapes requires students to walk the UM campus, find trees and take inventories of the trees. The professor for this class will provide a checklist of questions for students to answer (in order to identify the tree type). The students will walk through the checklist, determine the tree type based on the checklist answers, and then submit the answers to the professor via a server.
6. Cost of Living Diary.

The World Bank has lots of data on Product Price Parity (PPP), which measures how much things cost in other parts of the world.

Your app will be targeted at middle school or high school children, who will keep a purchase and use diary. Their purchases and use will be analyzed to show them how much these item cost in relation to average local incomes.

This data will then be compared to representative children (or eventually real children) living in other parts of the world. What kinds of things might you be able to learn? What kinds of foods people eat in different parts of the world, which goods are readily / not readily available, how much discretionary income do people have (to spend on music, for example).


Parents often find it hard to evaluate how their children are progressing in school. This problem worsens when the parents themselves have limited education.

Your app will allow children users to sign up to receive a once-a-day text message (or email if available) containing a problem whose difficulty is roughly appropriate to the child’s age.

The child will do the problem and then send back an answer. Over time, your app should adjust question difficulty to the child’s performance. Your app should also keep statistics at varying geographic granularities. This data will help to create benchmarks detailing what children in different countries learn and know at different stages in their development. Finally, parents should be able to see how their children are performing relative to children in their communities, regions, countries, etc.

You might start by limiting yourself to English-speaking countries and to math problems that don’t involve region-specific information. Longer term you could think about crowd-sourcing translation of the questions to different languages and you could add a tutoring service (like vark.com) to help children learn how to answer that day’s question.


Your app will encourage people to better understand the nutritional value of the foods they eat. Your app will take the form of a game in which a user 1) is given two foods, 2) is asked to determine which of the two foods has more of a certain factor (sugar, salt, solid fats, etc.) and how much more of that factor it contains, 3) the player wagers (using virtual chips) based on how confident they are in their answer. Payoffs will change based on the accuracy of the answer.

The underlying idea is that people often have incorrect mental models of the world. Can your game help people to see where their mental models diverge from the data?


Take a photo (or image such as a satellite map). Cut it into jigsaw puzzle pieces and allow users to reassemble the jigsaw puzzle on their device.

To make this more interesting we will make this a collaborative multi-player game for Maryland Day. The photo will be a satellite map of the UM campus.

Users can work on the part of the puzzle where they are actually standing. Together can all users reassemble the entire UM campus map.

You could also allow users to sign their completed puzzle and add some text to it.

10. Poor Man’s Thermal Imaging Camera.

Using the Open Accessory API, connect an infrared thermometer to a device.

While using the thermometer to evaluate a house for areas of excessive heat loss, snap a photo, take video, or otherwise indicate areas of excessive heat loss visually.

The idea is to have a visual record of the heat loss analysis. You’ll need to do some research to figure what what kind of thermometer you will need and whether they are available.

Your app works in a virtual 2x2 grid. The app displays a pattern like the Simon game. You recreate the pattern by physically gesturing with / moving your phone. If successful the app replays the previous pattern and then adds one more movement.

Your app will support a two person game mode. 1st player moves his or her phone to some position in the plane, as above the move selects one of the four grid cells, and then returns to home position. The 2nd player copies the 1st player’s move and then adds a move of his or her choosing. The 1st player responds....

This idea might be modified in several ways, playing on the idea of seeing if people can repeat various hand / arm motions. For example, use two phones to send signals using the Naval Semaphore Flag Signaling System (See http://www.marinewaypoints.com/learn/flags/semaphore/semaphore.shtml).

12. Find my Friends Without GPS.

Your app will allow users to know whether friends are nearby. Users register and identify friends, who can then be invited to become users of the service.

One catch is that your app is not allowed to use GPS to find friends. The app can only use WiFi (if available) or cell tower movement information. You will need to evaluate and document your app’s power consumption in comparison to a GPS-enabled app.

Another catch is that your app must work in the background. Users will not have to start up the app each time they move and will not have to check into a location (as with apps like FourSquare).

Another catch is that since this app works in the background, it has many negative privacy implications. You will need to provide flexible and easy to use ways for app users to control their location information.


Your app will allow UM students to record how much and what type of trash they generate over a specified period. Your app should support visualization and analysis of the resulting data.

Given enough data your app could suggest ways in which the students could cut their trash production. For example, it could identify that the user throws away a new coffee cup every morning and could suggest that the student try bringing a reusable coffee cup.

You should also consider what you can do with the data of many users. See also: http://challenge.gov/epa/222-game-day-challenge-2011.

14. Self-assembly at the Salad Bar

Your app should allow users to visually construct a salad from a visual representation of the salad bar (Would work just as well for burritos I imagine). This could involve downloading that currant day’s special ingredient lists, etc. The users can then assemble their salad ingredients visually, add salad dressing and toss. Once done, the user can then order their salad from a restaurant that makes salads (e.g., Sweet Greens). Once the order is uploaded. The app can give the user an order number, post the order to the kitchen staff, inform the user when their order is ready, and create a check.

No more lines!

15. Parent Screen Controller

Create a calendar that specifies times when your apps can be used. The use case is for parents with kids that have tablet computers for school use. Could also include a reporting feature. The system should also terminate apps if they are already running, but later move into a blackout period. Most importantly, you must ensure that this system can’t be defeated by just uninstalling the controller app. This will probably involve rewriting the Android system code.

16. Wine Bar Menu & Notebook App

Allow customers at a wine bar to sit down, view a menu, order food and drinks and then take notes about the wines they are drinking. Notes should persist across across visits. You may want to tie notes and reviews into Facebook or Google+.
We have a customer for this who will provide graphic content and help in understanding wine lover lingo and application requirements.

17. Lifeline Manager

Create an application that allows people to build and maintain support networks in case of need/emergency. This idea comes from a challenge created by the The Office of the Assistant Secretary for Preparedness and Response to help in emergency preparedness. See http://challenge.gov/HHS/220-the-aspr-lifeline-facebook-application-challenge.

The idea might be modifiable to other use cases where managing a network of relationships might be useful. For example, supporting a substance abuser, an elderly person with medical conditions, keeping track of travellers in a foreign country, supporting military families who have members deployed to a war zone, etc.

18. Home Movement Training and Evaluation

Build an app that helps rehabilitating patients do home movement training and evaluation. I was contacted about this by a UMD researcher and don’t have all the details, but the basic idea seems to be to measure forces as a user moves the phone to determine the muscular control and strength of the user.

19. Medication Management

Create an app that reads a pill bottle’s label, captures the data from the label and checks for contraindications between the current medication and all others currently being used by the patient.

20. EMedCheck

Develop an Android version of an medication screening instrument that medical personnel use to determine whether or not to give certain medications/vaccinations to a particular patient. Your app will need to support screenings for multiple medications.

There is an existing version of this app for other platforms. See http://www.isr.umd.edu/Labs/CIM/projects/clinic/emedcheck.html

21. Dual N-Back Brain Game

There have been some experiments looking at whether some aspects of intelligence can be improved with training. One game called Dual N-Back has been reported to have been useful in doing this. Your app should implement a version of this game. For more information see http://www.soakyourhead.com/.