

## **The Student/Library Collaborative: Toward Transformative Mobile Library Service**

This two-year collaborative mobile application development program offers an exciting possibility for invigorating the on-site library experience by integrating library circulation and collection data into the browsing experience of the student. New methods for accessing library and campus information that are based on student suggestions and library data will be developed by a team of library researchers, programmers, and students. These co-designed applications will assist users in finding and locating library resources, collections, and services through the use of their mobile device. The team will provide a replicable model for working with and mentoring student design teams; a training program for using library data to create mobile applications; access to the codes and applications that have been created; and lessons learned. This demonstration grant could provide a significant leap forward in the design for location-based services for libraries of all types.

The participants will coordinate a two-year student collaboration program to co-design mobile applications with students that provide location-based services to assist users in finding and locating library resources, collections, and services. This collaborative program will document best practices for working with student design teams, as well as lessons learned and the benefits of student mentoring.

This demonstration project serves three audiences. Students on campus will benefit from the applications developed that will provide new ways of library engagement with services and collections. The deliverables will benefit librarians throughout the nation who are interested in learning how to extend previously un-used library data into the onsite library experience. The program will also benefit students on campus who are engaged in technology creation, development, and implementation. By using focused mentoring, librarians will help students create tools that assist in the discovery of library resources. Librarians will benefit from working with students to learn of what they value in libraries and how new library services can be shaped in a way that meets those expectations.

### Goals

1. Increase student collaborations and input into library software design;
2. Improve the abilities of libraries of all types to provide services for location-specific information needs;
3. Broaden access to library collections;
4. Create connections between changing student computing uses and library resources and services

This program targets the design, development, and delivery of interlocking mobile applications and interfaces based on previously untapped library data. This two-year project will produce a generalizable “collaboration game-plan,” the resulting extensible applications, training modules, and program design guidelines that can be utilized by other libraries and cultural institutions of any size, type, or patron group. The work designed here takes as its departure point the idea that

next generation access tools that are useful for students are those which students have had a part in shaping through formative evaluative feedback and co-creating in the initial design phases.

Building on already established collaborations with students in the Department of Electrical and Computer Engineering, The Department of Computer Science, and the Graduate School of Library and Information Science, a student design team will be formed to compete for prizes based on the development of mobile applications that meet the program's criteria.

This project will provide a training ground for students interested in usability testing and technology development for projects to support curricular and larger career needs. It will also create a model that can be replicated for identifying student technical ability throughout the campus that can be tapped to identify what they value in library services and then to use library data to create location enhances services the re-invigorate the onsite library experience.

## **National Impact and Intended Results**

*A model for student-led software development programs  
Innovative mobile library applications*

Getting turn-by-turn directions to specific library materials based on a known call number, locating similar materials to an item in hand, and connecting to related class and campus resources are a few of the known student needs with which mobile application development can assist.

**The software tools developed through this grant can provide inspiration to other libraries for new methods to connect their users with their research resources, helping libraries keep pace with changing national trends towards mobile device use. The coding framework for the software will also be designed with portability in mind, so that other libraries with sufficient programming expertise can readily adapt them for application to their own local settings. The APIs designed will also be designed for interoperability, and build around common types of library data used in other large-scale digital initiatives.**

*Transferrable user research on student preferences for mobile software applications*

## **Deliverables of this project include:**

- Documentation on best practices for collaborative student-led software development programs that can be replicated in a variety of library and information technology settings (a model for libraries of all types, regardless of patron type);
- APIs for providing common types of library data to students to use in software development;

- Student-developed software applications for mobile devices utilizing the above data;
- User research/usability studies on these software applications;
- Production and assessment of significant new knowledge and tools on the location-based needs of researchers and best practices for meeting those needs
- A training program for libraries that guides them through the process of extending library data into location-based services that may lead to a transformation of the on-site library browsing experience.

## Year 1

### *1.1 Collaborative design meetings with students*

Already existing partnerships with departments will be leveraged to gather input and desired functionalities on the next generation of location based mobile access tools.

- The programmer will work with library staff and students to create APIs. The first student design team will be selected (through a competition) and trained and mentored through the development from APIs to APPs. Examples of starter, location-based projects that can be developed the first year are based on what students have requested:
  - a. wayfinding software code for retrieving recommendation tags (items that people tag as favorites) from the library catalog; APIs for the library catalog (Voyager) reports server for location-based services that indicate nearby popular resources; popular reserve items; popular call numbers of the week; creating a Wordlens App<sup>1</sup> (uses OCR to recognize text and redirect – so holding a book up to see the call number, then relaying info about it, or holding your cell phone up to a catalog page with the call number on it and connecting to the real time positioning and recommendation information) Jim Hahn (a co-PI) has worked on.
  - b. Easy Search: most popular queries for the day; week; month; if possible to develop the most popular queries by people enrolled in a specific class
  - d. “Course packages” of information for students based on user feedback from multiple past use studies: mobile usability, web usability, service focus groups.
  - e. Other resources i.e. what is available in the library that is on the New York Times best sellers list. We will explore the possibility of integrated these XML strings into already existing mobile Apps, such as the Layar API (<http://layar.pbworks.com/w/page/7783228/FrontPage>). More about Layar here: <http://www.layar.com/>
- Gather ideas from students of other things they believe should be designed given the data (whether it’s call number information, materials, various library tools, information).

### *1.2 Programming APIs for extending library data sources*

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<sup>1</sup> <http://www.wired.com/gadgetlab/2010/12/word-lens-augmented-reality-app-translates-street-signs-instantly/>

Previously unused library data, such as book circulations, popularity of reserve items, popular videos circulations, are generated. Programming is partially informed by student input in step 1.1

### *1.3 Development of Apps/user testing on Apps*

By the end of the first year prototype location-based Apps will be developed that have been informed through student input. User testing is a part of the formative design process. Graduate hourly students will assist with user testing and documenting results of the usability of Apps.

### *1.4 Students presented with design awards*

Since this demonstration will feature a design competition the best projects will receive awards.

### *1.5 Conference presentations and documentation*

Initial dissemination of the planning, work and results will be presented at two conferences. Documentation of the process and usability results will be ongoing.

**Year 2** – Second round of student-created Apps and usability testing; documenting work and making available software code and findings on location based needs of undergraduate students.

### *2.1 Development of Apps/user testing on Apps*

Second round of student developed Apps competition. User testing is a part of the formative design process. Graduate hourly students will assist with user testing and documenting results of the usability of Apps.

### *2.2 Best practices documentation is created for student/library collaborative projects.*

With graduate hourly help, librarians will document lessons-learned and a general method for forming and co-creating library services.

### *2.3 APIs for extending previously un-used library data are made openly available to the library community.*

The APIs will be developed as openly as possible so that other libraries could make use of the general framework for repurposing library data for location-based library services.

### *2.4 Mobile application code is made freely available for libraries to re-purpose.*

The software code from this project will be made available from the University of Illinois institutional repository – which will provide a long-term access to the digital archive of these digital products.

### *2.5 Lessons learned documentation/videos in the location-based needs of students are produced.*

Librarians, along with graduate hourly will document the desired functionalities and library services for location based needs of students.

### *2.6 Stable, production level applications are made freely available on device specific application stores such as the iPhone App store and the Android Market.*

### *2.7 Conference presentations*

Dissemination of results of the program at identified conferences.

PI: Dr. Lori Mestre

Co-PIs: Jim Hahn and David Ward

# University of Illinois at Urbana-Champaign

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Visiting Research Programmer: Nathaniel Ryckman

Visiting Program Manager: Joe Troy

Graphic Designer: Maria Lux

User Experience Researcher: Ruth Yeh