

Gumbo: an application to support impromptu collaborative workspaces on campus

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Abstract

Gumbo is a web application that supports the creation of impromptu collaborative workspaces on the Carnegie Mellon University campus. The application prompts students to share information about what they are working on and where on campus they are working. Students may join others in a workspace for the purpose of maintaining focus and productivity, collecting feedback on a creative project, or collaborating on group work. This project describes the creation of Gumbo, from early user research through the development of a final prototype.

The Problem Space

Undergraduate students at Carnegie Mellon University are notoriously faced with a heavy workload, no matter what field they choose to study. Unlike students in other colleges, those in studio programs in the College of Fine Arts have dedicated workspaces where they are surrounded by their peers who are working on similar projects. This type of environment allows for easy access to feedback and critique on creative work. The vision of this project was to create a digital application that would enable undergraduate students across the university to mimic this studio environment.

User Research

In order to gain a better understanding of the problem space, I conducted a series of interviews with a variety of people on campus. The interviewees included 1 alumnus, 5 seniors, and 1 junior in several disciplines, including design, human-computer interaction, linguistics, professional writing, creative writing, philosophy, economics, and information systems. The interview questions were designed to uncover more about how undergraduate students work. While the interviews were conversational, the following list of questions served as a guide:

1. Where on (or off) campus do you work mostly?
2. Do you like working with other people? Why?
3. How do you arrange work sessions with others?
4. Do you use social networks to update friends regarding where you are or what you are doing?
5. Do you ever collaborate with students outside your major? How do you find these types of collaborators?

Based on the findings from these interviews, I drew the following set of conclusions that served as guidelines for the design of the application:

1. Many students utilize communal space to encourage productivity

Overall, those interviewed indicated that they are usually more productive when they are working alongside other productive people (even if the work is individual or unrelated). One student described it as being "peer pressured" into completing an assignment. Students reported that working alongside other people also makes the work more enjoyable. Most interviewees noted that they work best in communal spaces such as a library, coffee shop or the communal areas of a dorm or apartment, such as a dining room, living room or lounge. People find that their bedrooms or dorm rooms were not conducive to working, as they are distracted by television or often tempted to take a nap.

2. Feedback from others is important when "creating and making"

Many people reported that they seek feedback from others for projects that require creative work and thinking. For example, professional writers seek user feedback to determine the usability of documents

they create. Often, talking through a problem with another person helps give the issue new perspective and can lead to an innovative approach.

3. Many students have a core group that they utilize to get work done

Those interviewed reported that they often meet with the same set of people when they are looking to work on school assignments. There is no one clear formula for determining who a student will seek out when he or she is looking to be productive. It may be friends that live nearby, peers with the same major, or someone from an entirely different department whose work habits are compatible to his or her own. One student mentioned that she likes working next to electrical engineers or computer scientists, even though she studies professional writing and linguistics. The quiet, diligent work style of these students matches her own and creates an environment with very little distraction.

4. Projects benefit from input across disciplines

Students reported that when working on large projects (such as a thesis or capstone), they often feel in need of advice from people outside their own field of study. A design student reported that she sought out a friend of a friend that studied decision sciences for advice on determining her research process. Others reported on the growing technology start-up environment amongst Carnegie Mellon undergraduates. Often engineers are looking for designers to collaborate with on hardware or software prototypes.

5. Methods for scheduling group work sessions vary

Students indicated that they use several methods for creating group work sessions.

Text messages and instant messages are used to schedule sessions in the very near future. For example, a student may text a friend indicating he is in Hunt library and the friend should stop by if she wants to work on homework.

Students also use social networks, including Facebook, Twitter, Foursquare, and Path to update their friends and peers about where they are and what they are working on.



Students use social networks, such as Facebook, to update their friends about where they are working on campus.

Other students reported that they go to a certain common space assuming that someone from their core work group will probably be there. Students reported that they often learn the schedules of their friends (consciously or not) and can sometimes predict their location.

Students in the same classes often schedule work sessions at the same time every week, based on the courses schedule of assignments and exams.

One student reported that sometimes truly impromptu study sessions can occur when students in a common space overhear one another talking about material for an upcoming exam and decide to all study together.

6. Some work must be done individually and alone

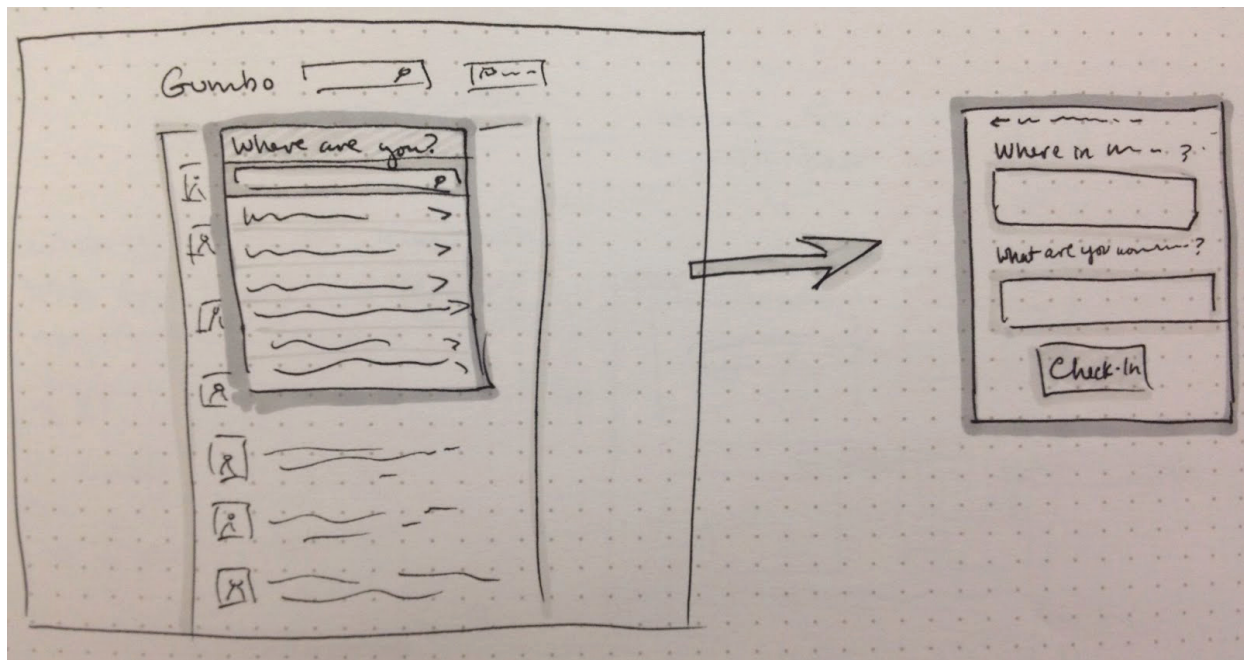
One student that I interviewed indicated that he always works alone in his room. As a philosophy major, his assignments are usually papers where any type of collaboration is discouraged to due concerns about plagiarism. He has a very diligent work ethic and finds that working with any type of person (diligent or not) is distracting. An application like Gumbo would not be useful for this type of student.

Design

Based on conclusions outlined above, I set out to design a product that can be used to:

1. Increase productivity
2. Provide a way for people to get feedback on projects
3. Collaborate with others in related fields across campus

I created wireframes to illustrate how Gumbo works.



Gumbo version 1: Wireframe for check-in form (2 step process)

Checking in

When a student wants to create a new post about where they are and what they are working on, the "check in". This process involves the following steps:

1. Choose where you are

This information allows other people to find the student if they are interested in joining the work session.

2. Tag post with what you're doing

Tags could include the course name or number that a student is working on, the assignment name, the general topic, or the tools that a student is using, such as programming languages or computer software.

3. Choose whether you are looking for feedback or just quiet work session

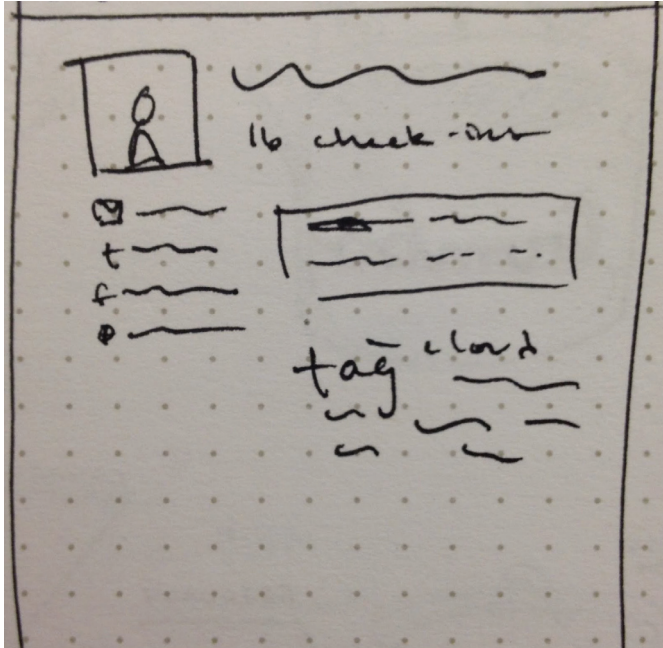
The bullhorn icon indicates that the student is looking for feedback or discussion about their work, while the headphones icon indicates that they would like to work quietly.



Gumbo version 1: Wireframe for main feed

Main feed

The information presented on the main feed is designed to help users find students that would like to join in a work session. Tags help users find others working on related topics or courses. The headphones and bullhorn icon help user determine what kind of environment the other student is looking to create. The “filter by building” feature allows users to find other students that are working nearby. The search feature allows users to filter posts by a specific tag, making it easier to find posts by topic, course, tools, etc.



Gumbo version 1: Wireframe for profile page

Profile pages

Each user in the system has a profile page that features a photo of that user, which makes it easier to recognize them if someone is looking to join their work session. Users can also list their contact information, which allows other students to get in touch with them if necessary. Finally it features a tag cloud. This is a list of the tags that the user has most commonly used when checking in to the system. The size of the font for each tag represents how often the tag has been used. The tag cloud provides at a glance look at what people work on most. This is useful for a user's own self-reflection and can also help other users discover people to collaborate with in future.

Using these wireframes, I received user feedback on the application's design. About 90% of the 12 potential users I spoke with indicated that they would use the application. They did note however, that there would need to be a lot of other people using Gumbo as well in order for it to be most useful. They did not find the check in process cumbersome and reported that if they found enough benefit from the application (people actually joined them in the work session), that they could see themselves checking in on a regular basis. Other feedback included the need for some sort of following or grouping feature, so that users do not have to scroll through hundreds of posts in order to find a work session that they'd like to join. About half of the students did not understand the point of indicating quiet working. They found it confusing and felt it might dissuade other students from joining the group. Due to this user feedback, I decided to cut the question about whether users were looking quiet working or discussion when users check in.

First Release

Gumbo was developed as a web application using Ruby on Rails. Twitter Bootstrap, an open-source front-end toolkit was used to speed up the prototyping process. Gumbo features a responsive design optimized for all major screen sizes, including those found on desktops, tablets, and mobile devices. The responsive interface was developed using media queries, as well as Bootstrap's responsive grid. The system was deployed on Heroku, a cloud application platform with support for Ruby on Rails. At the time of writing this paper, the application could be accessed at <http://getgumbo.com>.

The screenshot shows the main feed of the Gumbo application. On the left is a sidebar with the following elements: a blue header with 'Check In', a search bar, a 'FILTER BY BUILDING' section listing '300 S. Craig St.', 'Baker Hall', 'Cathedral Mansions', 'CFA (college of fine arts)', 'Cyert Hall', and 'Doherty Hall', a 'My Account' section with 'Sign Out', and a 'Feedback!' button. The main content area displays three check-in posts:

- Molly Samuels** is in **300 S. Craig St.** BHCI Lab about 1 hour ago
gumbo blog w/Hcokim & cookies
- Harold Kim** is in **300 S. Craig St.** BHCI Lab about 1 hour ago
DMS Presentations Logos CheckingInIsTheBestPartOfMyDay
- Vivek Pai** is in **Doherty Hall** DH 2210 about 3 hours ago
information warfare zzzs

Gumbo version 1: Main feed

search

FILTER BY BUILDING

- 300 S. Craig St.
- Baker Hall
- Cathedral Mansions
- CFA (college of fine arts)
- Cyert Hall
- Doherty Hall

My Account

Sign Out

Feedback!

Where are you? cancel

300 S. Craig St.

Baker Hall

Cathedral Mansions

CFA (college of fine arts)

Cyert Hall

Doherty Hall

Gates-Hillman

Hunt Library

Margaret Morrison

Margaret Morrison

Morewood Gardens

Newell-Simon Hall

Porter Hall

Sigma Chi House

Skibo Gym

Stever House

University Center

300 S. Craig St. BHCI Lab about 1 hour ago

& cookies

300 S. Craig St. BHCI Lab about 1 hour ago

os CheckingInIsTheBestPartOfMyDay

all DH 2210 about 3 hours ago

Gumbo version 1: Check-in form

After Gumbo's first release, 20 people were invited to use the system. Of these 20 users, 10 were determined to be "active" users, checking in 2 or more times during the first week. Three users were considered "very active", checking in 12 or more times during the first week.

I set up a User Voice account, which allowed me to place a feedback tab on the web application and easily collect user comments right from the application. I also spoke with the application's active and very active users in order to gain initial feedback on the first version of the system.

The following is a summary of the overall feedback collected:

1. There is too much emphasis on where you are, rather than what you are doing

The question of "where you are" appears first when users check-in and is displayed most prominently on the main feed. Many people questioned how Gumbo was different from other check-in applications, such as foursquare.

2. There is no clear call to action

When a user visits the main feed, they see a list of where people are and what they are working on. But what should that visitor do next? It is not clear that they should find someone they would like to work with and go and join that person in his or her physical location.

3. Tags are not enough

People wanted to leave a longer comment when they checked into Gumbo, not just tag their post with a few words. Users felt a longer comment would make them seem more casual and approachable. Also it would allow them to post links to material they may be working on, such as photos that they put online or the url of a website they are redesigning. Additionally, people wanted to be able indicate if they were with another user and used tags to do so, even if it was not the optimal solution.

4. “Future check-ins” could be useful

Many users expressed interest in being able to indicate where they would be in a few hours, rather than right now. These future check-ins would be limited to later in the current day, as there are already plenty of tools for scheduling events. Users thought that some very short term planning may be useful.

5. Gumbo is a great tool for showing off

Feedback from this first release uncovered a reason to user Gumbo that I had originally overlooked. The system is an ego-booster, allowing students to brag to others about the neat work they are doing in an appropriate way. This ego-boosting could have a very positive effect on Gumbo’s popularity.

6. Groups could make this more useful

Once again, people requested that a grouping or following feature be added so that they don’t have to manually filter through a lot of posts.

Second Release

Based on the feedback gathered after the first release, I chose three changes to make before the release of a second prototype:

1. Reordered check-in questions

Asking users to share what they are working before where they are indicates that what they are working on is most important. Where they are is just a logistics detail.

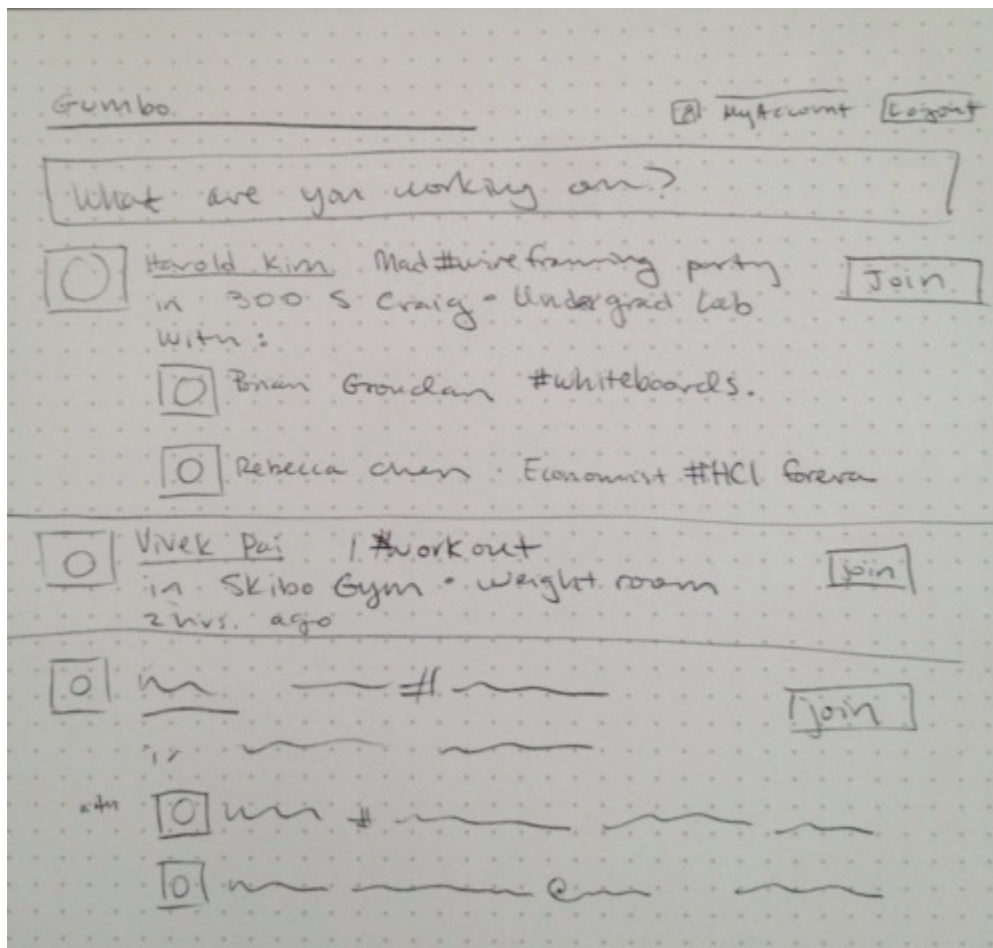
2. Commenting with hashtags

Instead of tagging their post with words or phrases, users should leave a comment, similar to a tweet on Twitter, that describes what they are working on. A ‘#’ sign before a word will create a hashtag. The hashtags make filtering posts by tag easier and makes it more likely that the tag cloud on a user’s profile page still provide an at a glance view of what they work on most.

3. Join button

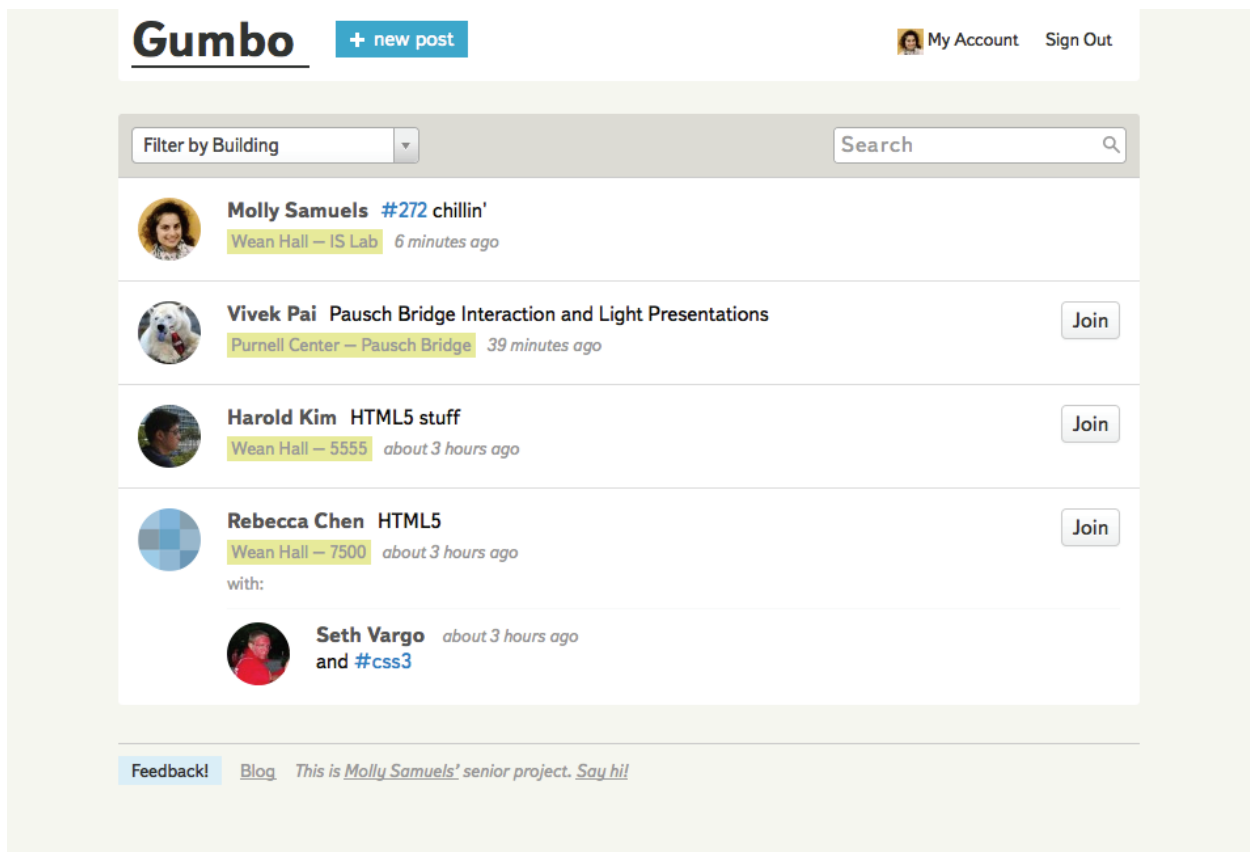
Users can click a ‘join’ button next to any other user’s post and they will be checked into to the same location. All the user has to do is add a new comment if they like. Their post will be listed

underneath the post they have joined, indicating that the two users are working together. The 'join' button provides a clear call to action for new Gumbo users.

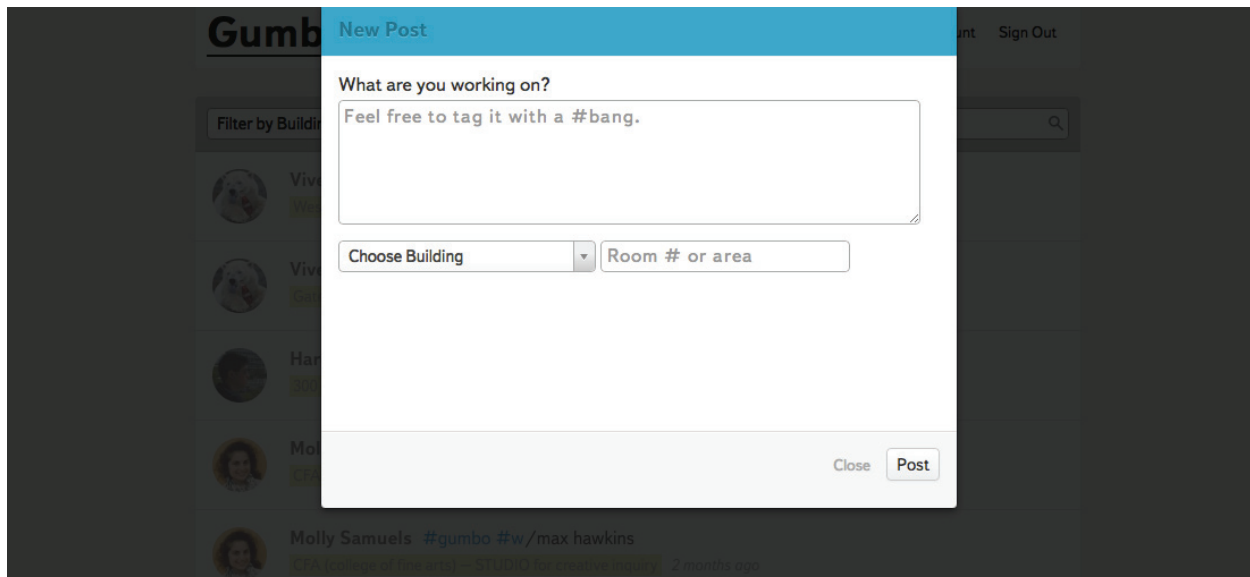


Gumbo version 2: wireframe for main feed

The feedback from the first release indicated that there were many new features that could be added to improve the system. However, I chose to implement the three changes described above as I felt these were the easiest things to alter with the largest positive impact on the overall system. Allowing a user to organize other students into groups would be nice and it was requested during both phases of design feedback (wireframes and the first prototype). However, this feature would make the user interface more complex and, most importantly, the effects of this feedback would only be felt if there was a huge increase in the number of active users in the system. Allowing users to check into the system a few hours in advance was another very interesting idea and I strongly considered adding it to the second prototype. However, I chose to encourage the most active users to add a note in their comment that they are checking in for a few hours from now. If the trend caught on and proved to be a popular use case, I would then add it as a more formal feature to a future release.



Gumbo version 2: Main feed



Gumbo version 2: Check-in form

The overall reaction to the release of the second prototype was positive. Users felt that the changes that were made were a large improvement to the first release and the join button is quite popular. The application was more widely promoted during this release, but user adoption was slow. While new users express that there is potential for Gumbo's usefulness, they are concerned that there are not enough active users yet to make checking into the system worthwhile. Users are also concerned with how this new social network fits into student's existing workflow. If they are already updating friends on Twitter, Facebook, Foursquare, and other networks, do they really need a new space to keep their peers up to date?

If I were to continue developing Gumbo, I would alter the system so that it is more tightly integrated with existing social networks that Carnegie Mellon undergraduate students already use everyday. Twitter, Facebook, Foursquare or Path users could grant Gumbo access to read their posts on these networks. Then they would simply add a hashtag (i.e. "#getGumbo") onto their posts or status updates when they are working on a school assignment or creative project. Gumbo would then parse the posts with this specific hashtag. These networks already have geolocation features, so Gumbo would be able to approximate where on campus the users are checking in from. Gumbo's main feed would display an aggregated list of posts with this tag from all across the major social networks. In order to accommodate those who do not use other networks or wish to keep their posts on other networks private, Gumbo would still allow users to check in directly from the web application.

This solution may lower the barrier to entry and attract more users to Gumbo. The more people using Gumbo, the more other people are likely to check in whenever they are looking to create a productive group work session. Overall, I feel that Gumbo was a good first attempt to help undergraduate students create impromptu collaborative workspaces on campus.