

CS 194 Proposal

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Abstract

inturn.io is a web and mobile solution for college students to manage the various facets of their internship or job recruitment process through a centralized cloud-hosted platform. Centered around an efficient, easy-to-use dashboard, the product allows students to streamline the recruiting process for all their positions, providing tools for managing resumes, cover letters, contacts from networking events, job-related events, and interviews. Furthering its utility, the solution features integrations into various popular tools commonly used to help manage the job recruitment platform, such as Gmail and Google Calendar.

1 Description

Our product eases the job application process of every step, from maintaining resumes and cover letters to managing the interview process.

Since the job application process is complex, often with students using many different technologies to manage their job campaign (such as email, a calendar, an excel spreadsheet, business cards, etc), we intend to make the application very feature-rich, with integrations with tools that are already ubiquitously used in the application process. In particular, a tentative list of features includes:

- An easy-to-use dashboard that aggregates relevant, time-sensitive information and action items relevant to applications, such as unread emails, emails that need to be responded to, upcoming interviews, incomplete cover letters, and application deadlines.
- A storage system for documents, such as resumes and cover letters, organized to allow students to have different versions of documents for different companies they're applying to, or different versions for different industries of companies. A version control system for documents can also be included for documents, to allow students to revert back to old versions of resumes.
- A storage system for contacts, including a mobile business card recognition feature on a mobile app to allow students to import contact information directly from business cards.
- A storage system for interviews and events (such as networking events, career fairs, etc), with integration with Google Calendar to allow events that students add to the application to be automatically inserted into the calendar.

- A simple messaging system for recruiting-relevant emails, with integration with Gmail. This would automatically filter application-relevant emails from the user's mailbox, and do the same for incoming emails, organize them by company and application (if there are multiple applications for different positions for a particular company). This would also have a simple email reply service that allows students to have the entire conversation process held within the application. Furthermore, the application will also extract relevant information from emails, and integrate it with other facets of the application, such as interview confirmations and logistical information.

Notice that in particular, the application is not meant to be a solution for the job *search* process. We made this decision for two reasons. There are several products and tools that already do a good job of the job search process, and students tend to have their own, sometimes idiosyncratic, tools that they use to search for applications, such as LinkedIn, websites for specific companies, and their university's career services. There is little benefit to students in trying to reinvent this process.

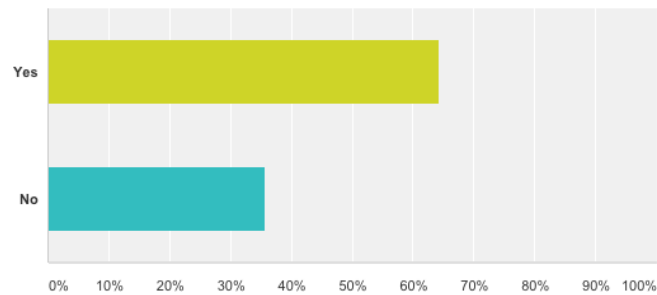
The application will be built around a web app and a mobile app. Since most of the natural application process (writing resumes and cover letters, submitting applications, preparing for interviews) happens on a computer as opposed to a mobile device, many of the features will be specific for the web app. However, certain features are useful for mobile, such as email filtering and responding, a simplified dashboard, and a business card reader. Finally, to take full advantage of mobile, push notifications would be sent that allow students to be notified about recruiting-relevant emails, upcoming events, and other time-sensitive information.

2 Need for Product

The impetus for building this product stems from our personal experiences and challenges while recruiting for internships and jobs as undergrads, and from the understanding that some of our peers share similar experiences. We conducted a survey of our peers to establish the need for the product and subsequent use cases:

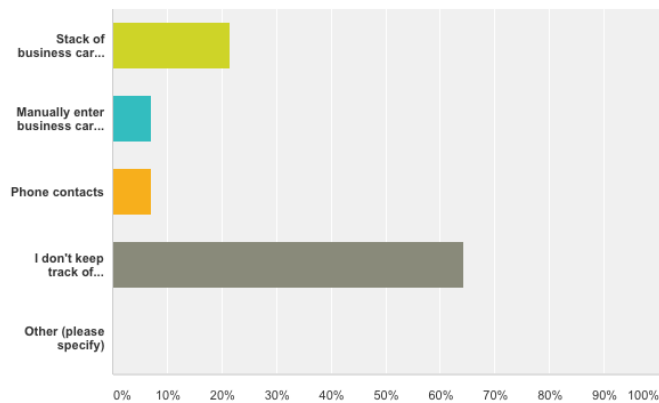
1. While a majority of respondents have a backup of application materials to internships (dropbox, google drive, etc), an appreciable fraction of respondents do not.

Do you have a backup of your application materials to internships? (resumes, cover letters, writing samples)



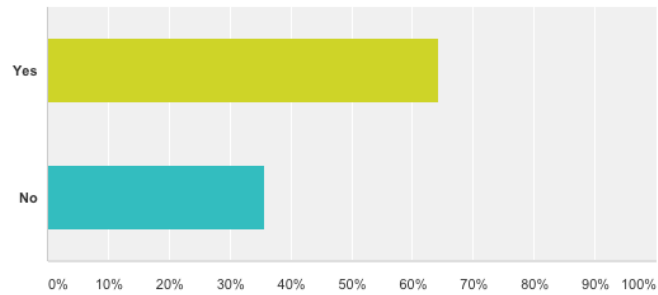
- Most respondents do not keep track of contacts from networking events and career fairs. The next largest group maintains a physical stack of business cards. The ability to associate networking contacts with jobs being applied to in the centralized platform offered by inturn.io would be useful to college students.

How do you keep track of contacts from networking events and career fairs?



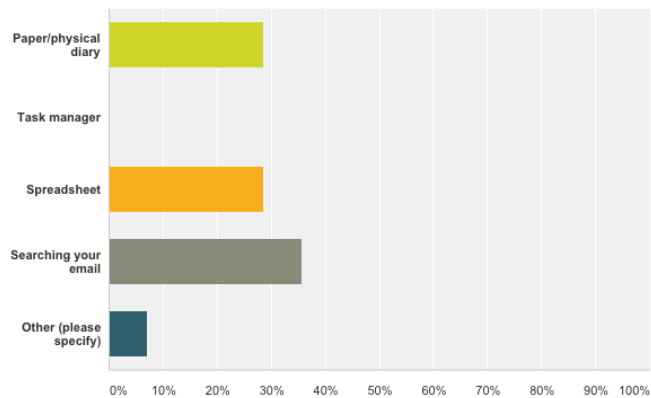
- A majority of respondents have previously forgotten to respond to an interview request or follow up to a contact. Our product intends to provide dedicated reminders through our web and mobile apps that ensure opportunities are not missed due to lack of organization.

Have you ever forgotten to respond to an interview request, or following up to a contact?



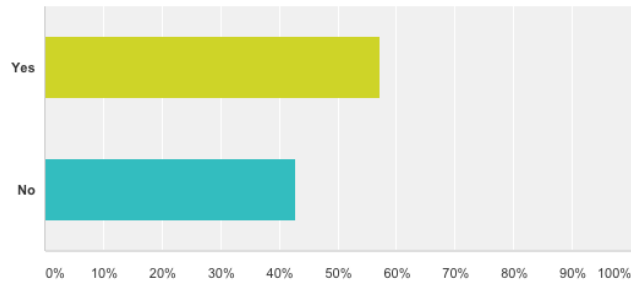
4. Respondents were fairly divided on methods used to keep track of places applied to and application related deadlines. Instead of having to search through email, maintain a physical diary, or an excel spreadsheet, inturn.io will provide this information to college students through an easy to understand dashboard.

How do you keep track of the places you have applied to, or are applying to, and the deadlines?



5. For the approximately 40 percent of respondents who use different resumes for applications, inturn.io will reduce the pain of maintaining folders and multiple versions through an easy-to-use web interface that also serves as a backup.

Do you use the same resume for all applications within a given industry? (i.e. same resume for all software engineering internships)



Overall, the need for inturn.io stems from our observation that college students lack a centralized process to manage and backup their application materials, keep track of contacts and recruiting events, and stay on top of their recruiting campaign through an intuitive dashboard summarizing their campaign.

3 Potential Audience

The intended audience for our application is college students who would benefit from a more effective way to organize each step of the hiring process. Because the season of recruiting is a critical time for most students, profuse planning and energy are placed into it. However, many still struggle to figure out the best way to effectively navigate the information that they gather at each stage in the recruiting process: important dates and contacts are saved on complex spreadsheets while important documents are stored in labyrinth file structures. Because so many independent tools are used, the information that the user desires is often disconnected and cumbersome to navigate. On top of that, students must also balance recruiting with academics and other student commitments. With that said, it is the motivation of our application to save students time and energy by centralizing and organizing the information obtained throughout the hiring process in a way that makes it easy for the user to access and navigate.

Through inturn.io, students will be able to refer to a single location for all of the information they've collected. A synchronized calendar will keep track of pressing deadlines, while an internal file system will allow the user to manage files and handle revisions. This will enable the user to be one step ahead during each stage of the hiring process, and focus on other pressing tasks that require more attention, such as preparing for their interviews.

4 Discussion of Competing Products

Our research yielded no products that offer an organizational tool for the college student's recruitment process. However, a small group of products concentrated on search aggregation and the ability to import jobs from a variety of channels, without the specific focus on college students.

This section discusses a few noteworthy competitors and the relative value proposition of inturn.io.

4.1 JibberJobber

From their website, “JibberJobber will help you find jobs, network, and track companies. There’s also a wealth of videos and a library of information from previous job seekers.” While JibberJobber provides effective tools for search and tracking, inturn.io intends to be more focused on features specific to college students, while leaving out the search space altogether. For instance, JibberJobber provides a graphical relationship diagram of positions and applicants that we believe provides little utility to the college student. Furthermore, JibberJobber’s primary features of an aggregate job search tool and a video library of candidacy improvement techniques are distinct from the focus of inturn.io, which is to provide an organizational tool for the application process.

4.2 CareerShift

From their website, “CareerShift was created to help job seekers successfully navigate the published and hidden job market to find gainful employment.” Most of the features of CareerShift are beyond the scope of inturn.io because CareerShift seems to focus on increasing application quantity, as evidenced by its features (1) “My Jobs finds EVERY job posted at EVERY career site” and (2) “My Campaigns distributes your resume through print or email.” While CareerShift does offer the ability to manage application materials online and stay on top of calendar events and deadlines, a quick glance at its UI shows that it fails to offer the simplicity and elegance that we hope to offer.

4.3 StartWire

StartWire positions itself as a “Job Search Organizer”. Similar to the other two competitors, they focus on search, aggregation, and tracking jobs. However, it also seems to be the closest to inturn.io, in that they organize all the user’s applications in one spot and track progress and activity. That being said, their core focus is to increase the frequency at which applications are submitted, while our goal is to increase the organization of the recruitment process.

5 Major Technologies Used

We intend to use several technologies and APIs to ease the development process and make it possible to develop several features without compromising on quality. A list of technologies is outlined below:

- Parse. We are using Parse as a Mobile Backend as a service (MBaaS) solution. Several features of Parse will be used, such as email verification, database hosting, document uploading, and other backend API calls. In particular we will use the core database model in parse to store tables that contain information for Contacts, Messages, Applications, Jobs, Users, Interviews, and Events.

- iOS. Since we will make a native iOS app, we will be working extensively with the native iOS technologies.
- Bootstrap. We use Bootstrap for all the CSS components for its simplicity in converting web applications to mobile.
- Express and Node.js for controllers and routing as our web/network frameworks.
- Google API. The Google API will be used for several features, with integrations into Gmail and Google Calendar, specifically to receive messages, get past messages, and add events to a calendar. For this, an OAuth token will be stored across the application for a given user, to allow students to only need to make the integration once.
- OpenCV. For the specific problem of business card reading, we will use text recognition and boundary recognition APIs from OpenCV, to first extract the boundaries from a business card and then identify the text
- Sci-kit learn, for any machine learning that might need to be done in order to classify emails as recruiting-related, extract dates and times from emails, among other needs.
- NLTK, for any simple natural language processing tools that might be useful for information extraction from emails.
- HTML and CSS for front-end design, and Javascript for scripting and making connections to the backend hosted on Parse.

6 Resource Requirements

Our internal file system will require that we have sufficient space for the storing of document files, such as resumes and cover letters, and their revisions. At the moment, the platform that we intend to use, Parse, allows us with a limited amount of space. However, if we exceed this limit, we may have to turn to alternative forms of online cloud storage such as Amazon Web Services. Additionally, Parse allows us with 30 requests per second. With that said, we must make sure that we do not exceed the limits that Parse sets.

7 Potential Approaches

At the moment, the most prevalent method of organizing for recruiting is through the use of complex spreadsheets and labyrinth file structures. Although this may be an acceptable form of organization, it is not ideal and can be thoroughly improved upon. A lot of time and energy is being wasted— searching for specific piece of information might force you to go through a lot of unnecessary data. Additionally, because many of the mediums used to store this information are independent of one another, there is no way to instantly follow a point reference from one source to the other. For instance, one will have to navigate to the directory that holds the resume for a company, and then access the spreadsheet to determine where it has to be submitted. Therefore, it would be ideal to

consolidate all the data in a single location with a flow that makes navigating a breeze.

The motivation of inturn.io is to do just that: centralize the information collected in a way that is intuitive and connected. Dashboards panes will help categorize the data while email linking will provide the synchrony so that the students are always a step ahead of the game. Furthermore, the internal file system will grant users quick access to their documents with the added component of revision control to navigate between previous versions of a document. inturn.io is designed to do everything a spreadsheet, file system, calendar, and contact list can do, but combined into a single synchronous master application.

8 Assessment of Risk

We assess risk from the perspective of two stakeholders: the developer and the end user.

8.1 Developer

- Dependency on the Mobile Backend as a service (MBaaS) offered by parse.com; if the service is taken down, our product will no longer function.
- Deprecation of any of the APIs or libraries enumerated in “Major Technologies Used”

8.2 End User

- Data security compromise could lead to resumes and transcripts being made available to individuals not authorized access by students
- API connectivity issues leading to improper retrieval of external data

We will keep these risks in mind when moving forward with design, development, and security considerations.

9 Next Steps

We have broken down our initial work into five steps, which will enable the core functionality in the product:

1. User creation flow. This is basically the flow by which a user creates an account, and updates the database to store their credentials, and validates their account.
2. Dashboard. Since the dashboard is the center of the application, the design of the dashboard and its implementation will follow.
3. Adding jobs. Since jobs are the top-level element of the data structures, the next part of the process would be allowing users to create and add jobs to the database, and have these updates synchronized with the dashboard.

4. Uploading documents. An important utility of the product is the ability to manage multiple versions of documents such as resumes and cover letters, so the interface and backend connectivity to Parse to be able to add and upload documents is a key next step.
5. Integrations with Gmail, Google Calendar. This is the final element of the core functionality of the product.

After the initial setup to get this core functionality working, the product would have the ability to effectively manage the basic aspects of a job application flow. After this is done, there are other features that can be added on to enhance the user experience, including automatic calendar updates from emails, business card reading, etc, which can be added in an arbitrary order, and are not essential to the basic flow of the product.