BluePages: The comprehensive, centralized, digital venture platform for the Yale community.

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Introduction:

This paper will discuss BluePages, a website developed to support the entrepreneurial activities of the Yale community. First, the motivation behind the web tool will be discussed, followed by an introduction and overview of the main features, views, and functionalities. This will be complimented by a further inspection into the “lean” research methodology behind determining product viability and the priority of features. Next, the technological details will be covered as well as web development findings and lessons gleaned from this project. Finally, future technical and theoretical improvements will be mentioned along with insights about the website’s impact on the future.

Motivation and Inspiration:

Some projects are motivated from answering questions that perhaps cannot be answered; others are motivated from answering questions that should have been answered long ago. The motivation behind the project fits the latter case, derived from one simple question: wouldn’t it be ideal if every Yale student/alumni could view the startup projects worked on in the Yale community in one centralized space? This idea led to further investigation into the existing tools in the entrepreneurial landscape at Yale, and in general, on college communities. The following discoveries supported the notion that a university-centric website to support entrepreneurial exchange might provide value:
1) The startup community at Yale is fragmented and opaque; there is no formal system in place to aggregate venture data and provide synergies inherent through increased transparency in a strong college network.

2) Yale’s entrepreneurial ecosystem has been on the rise in the last few years, including but not limited to, an influx of STEM-oriented students from university initiatives, popular SOM startup courses converting students interests, creation of supporting institutions such as the Yale Entrepreneurial Institute and Yale alumni-led venture capital firms dedicated solely to investing in Yale-affiliated startups.

3) Currently there are many “Linkedin for Startups” like AngelList which provide a digital infrastructure for the entrepreneurial community, but to my knowledge there is no comprehensive, university-centric application available or widely used at this point.

**Background Research and Methodology:**

To further explore the viability of the idea, I undertook both quantitative and qualitative research to determine the need for such a product, and if so, which specific issues were most critical. I pursued a number of outlets: 1) surveying current student entrepreneurs on their needs 2) collecting a database of student startup job postings sent through the CS Mailings panlist 3) speaking with entrepreneurship authorities at Yale and alumni founders.

**Step 1: Gauging The Market** First, I sent a “BluePages Preliminary Interest Form” ([https://goo.gl/forms/84GVU83ppViFUXcn1](https://goo.gl/forms/84GVU83ppViFUXcn1)) to student entrepreneurs to both gather demographic data (company stage, company category) on the types of startups availability and gauge the individual needs of these startups (resources sought such as mentorship, labor, capital, beta testers, access to markets). Theoretically, trends in the type and needs of the startups would frame the focus of the website. The results, through, truly highlighted the diversity of type, stage, and needs of Yale startups. Startups ranged from biotech to consumer electronics to HR and “sharing economy” apps. Stages ranged from ideation to ready for exit. Logically as follows, needs/pain points were diverse and ranged from a shortage of engineering talent to a lack of beta testers, to help with exiting.
Step 2 Narrowing The Scope: Next, I compiled a running database of all the startup-related postings on the CS Mailing Lists to gauge the type of posting. Between the dates of 12/08/2016 and 3/30/2017 there were 15 postings from mainly Yale College and Yale School of Management startup founders. Overwhelmingly, in addition to advertisement, the postings were requests for talent, mainly in the field of engineer, such as web, API, UI/UX, and mobile developers. This discovery caused me to narrow in on solving the labor needs and dependencies that seemed to be serving as bottlenecks for Yale startups. The data collected was also critical as the posters also doubled as the potential beta tester population.

Step 3 Validation: The final background research step to determine the scope of my project involved speaking with the actual customers and potential users of my site and consultants who work with this population to gain additional insights. I spoke with multiple alumni startup founders and acted in the role of the “therapist” listening to their struggles. Many concluded that it was difficult finding Yale talent or Yalies interested in joining their startups. Some also found frustrating the idea that there was no comprehensive directory of Yale startups or current students interested in joining a startup in some capacity. One of the most poignant struggles was finding accessing the talent pool. I confirmed this with meetings I had with Yale Entrepreneurial Institute advisors and entrepreneurial figures such as Kyle Jensen. The advisors at YEI emphasized a major pain point they noticed were single entrepreneurs who had trouble finding co-founders or individuals to help them execute on their brilliant ideas. Kyle Jensen, Director of Entrepreneurship at SOM, who could speak to the entrepreneurial community there, also emphasized that many SOM students had startups but lacked technical talent needed to execute. With these interactions, I developed my hypothesis that a digital hub focused on labor exchange would benefit Yale startups.
**Website Details:**

The deployed website can be viewed at [https://mysterious-mountain-50455.herokuapp.com/](https://mysterious-mountain-50455.herokuapp.com/). Please email me for login credentials. The latest github commits are located on the “design” branch at [https://github.com/2017bp/myproject/tree/design](https://github.com/2017bp/myproject/tree/design)

Translating over to specific features, I diagrammed 4 main features: 1) A Job Board and mechanism for posting positions 2) A comprehensive directory of Yale alumni and student startups 3) A comprehensive directory of Yalies interested in joining a startup. 4) Login feature and authentication

The website was designed to keep 3 fundamental aims in mind: 1) catalyze peer-to-peer collaboration 2) provide a vehicle for publicity 3) increase chances for venture funding/mentorship

**Views and Components:**

I implemented 8 main views, which all extended the base view containing the side bar navigation and header. This way, views had a level of consistency, and the transition between views was minimized and “contained” in an area on the page.

![BluePages](image)

**Figure 1: Login View**
The Login View was designed with simplicity in mind and Yale Blue (#0f4d9) theme incorporated.
Figure 2: Home View
The Home View page features a statistical dashboard displaying number of startups, users, job postings, and universities on the platform. As the website scales, the statistics will be useful for individual user understanding and user retention and acquisition.

Figure 3: Dropdown Menu
The simple Dropdown Menu allows the users to edit company settings if they have one, edit user settings, and logout.
Figure 4: Company Settings View
Users who are startup founders can edit company settings and submit to the company directory by checking “Display in company directory”.

Figure 5: User Settings View
Users can update their information here and can join the user directory if they check “interested in joining a startup”
Figure 6: Company Directory View
This company directory view is a table of all the registered Yale startups on the platform and their pertinent information.

Figure 7: Student Directory View
The student directory view is a table of all the registered users who seeks to join a Yale startup and their pertinent information.
Figure 8: Job Board View
The Job Board is a scalable listing of the job posts. There is a “View more jobs” button (not displayed) that will display more jobs in the case that the number of postings exceeds the page limit. Users can click “delete posting” to delete their posting. Users can click “More..” to view more information about the job.

Figure 9: Submit Job View
Users can submit a new job posting through the “Submit Job” View.
Technical Specifications:

Backend:
The backend framework used was Django for its comprehensive libraries, straightforward MVC framework, detailed documentation, and Django-Admin feature, an administrative extension to allow superuser management of user activity and data stored on the database. This outweighed some of the cons with Django, namely the general system complexity and complexity of features. I chose to use Postgres over other open-source databases and capacity in high-volume environments.

Frontend:
The frontend framework used was Bootstrap along with some Codepen-inspired designs. Bootstrap has a consistent, clean UI design, and despite complaints about load time, will suffice for my application in the short run. The Bootstrap Admin V2 framework was used to develop the sleek base feel and look of the site. Codepen, an open-source front-end community, helped to inspire my login design as well as the job board layout.

Implementation Details:

I divided my project into 2 main projects: accounts and BP. Accounts handles user registration and authentication, and contains my custom-built user models. BP handles all other views and contains 3 main models: Posting (a job posting), UserProfile (user’s information), and Company (company’s information). Instead of using Django’s built-in user authentication and User model, I decided to extend it and build my own since I wanted flexibility in the types of data I could store with a User. The UserProfile model has a one-to-one relationship with the user model so that the user model and userprofile model can be updated together in one form. Similarly, the Company model has a one-ton-one relationship with the user model. Finally, the Posting has User as a foreign key as well so that a post is associated with a user and can be deleted only by the associated user. Here is the database schema:
Other Tools:
I used git as the versioning system, and Heroku, a popular cloud-based platform to deploy the Django site. I used a physical kanban board and sticky-notes to process my development workflow.

Lessons/Findings:
The following are lessons from roadblocks I encountered:

1) It is important to choose a uniform design ahead of time, or a CSS Library, because styling on the go leads to incompatible UI components and bad practice.
2) Diagram the database models and fields ahead of time as precisely as possible to avoid extensive and often tricky database migrations that require rebooting and wiping the database.

3) Initial app deployment in the elementary stages followed by a continuous development-deployment model is preferred to developing locally and deploying at the very end (may lead to database or environment inconsistencies)

4) Refactor constantly or else technical debt will build up and be hard to clean up, especially with such a bloated Django code base.

**Future Improvements:**

1) Basic cross-browser UI-testing (Safari, Chrome, Firefox) did not lead to any noticeable errors but further testing is required before release.

2) Currently Yale Authentication has not been implemented. This is the next step for the login page to preserve the security of the information displayed in the website.

3) Individual company and user profile screens can be built to provide a further level of UI detail.

4) The Company and Student Directories can be made to be searchable and more robust.

5) A machine-learning tool can be implemented to recommend Yale alumni on Linkedin who might be relevant to a user's interests or a startup's profile.

6) Most importantly, this MVP stage website needs to be tested to see whether a) There is actually a use case, i.e. theory is translated over to empirical. b) The functionalities actually solve labor inefficiencies of the Yale entrepreneurial community.

**Conclusion:**

Yale has contributed significantly to my intellectual growth in the past four years, and I wanted to do something to give back. Bluepages is my way of doing so, helping fuel a further source of intellectual growth—the exchange of information on groundbreaking initiatives in the Yale community. This type of intra-university tool is the first to my knowledge, and may lead to expansion to other universities. There is still much work to do, and I hope to continue its development post-graduation so that as an alumnus, I will be able to view the interesting projects current students are collaborating on.

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Github Repository: https://github.com/2017bp/myproject/tree/design