

CS² (Project Proposal)

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1. The Design Problem

There is a significant portion of Computer Science students at Brandeis University who are in need of support that the department is currently unable to provide. Black and brown students, international students, and women are all underrepresented minorities in Computer Science (called “our targeted students” in the rest of the report) who are in need of more attention and support to help them succeed in Computer Science. There is no current digital platform for these students to connect and interact in a way that promotes growth and success in Computer Science at Brandeis.

Using this app (web app first for this semester, then phone app later in phase two) would create a way for our target students to understand and reach out to the possible assistance available throughout their Computer Science career at Brandeis. Through this application, our target students will be able to see possible faculty assistance resource in the format of who, what, when, where and how.

Another function this app could possibly achieve is that creating a way for brandeis computer science faculty to understand and assist these underrepresented students throughout their Computer Science career at Brandeis. Through this application, faculty will be able to see where students are in need and provide help as deemed necessary by the students themselves, as opposed to the university as a whole.

2. The Role of Technology

Some existing solutions to some of these problems are clubs like National Society for Black Engineers (NSBE), Society for Advancement of Chicanos/Hispanics , Native Americans (SACNAS), Women in tech, Girls who Code and the Grad Social outside of Vertica every Tuesday, but many students do not know of the existence of such activities, clubs and organizations. Another space for potential computer science connections to be made among such students is Vertica Computer Science Lounge. Vertica is a great, but intimidating space for students new to computer science who already feel uncomfortable in stereotypical computer science spaces. Although Vertica serves as the home to the majority of the Teaching Assistants, many international students feel intimidated and inhibited to interact with them because their English is not perfect. Other students avoid Vertica for fear of seeming stupid or unintelligent, even if they are in desperate need of help. The current technological solutions are not effective enough to assist these students who are not familiar with these systems, or whose specific needs are not covered in these current platforms. School sponsored support systems such as the department website and academic advising resources are static in nature and not fully able to accommodate the needs of our target students.

CS² could serve as the digital space for our target students to meet, interact, and learn. With technology and the internet as a medium, both current students and alumni to connect and share resources for success that the Computer Science department might not have access to. With this space open to an unlimited range of topics, students would have access to current resources as well as resources provided by similar students who have or are currently progressing through the department at Brandeis.

3. User Scenarios

Scenario 1:

R is a first-year student looking to study Computer Science at Brandeis University. He has absolutely no coding experience and feels somewhat uncomfortable in this predominately white institution. Sitting in his first computer science class ever, he looks around to see many white students and very few other black students. He sits alone and tries to keep up with the first day's lecture. R slowly but surely is unable to follow, while the other students all seem to be comprehending faster. After class, R goes to talk to his advisor about finding resources and community in Computer Science. His advisor recommends that he use CS², an application made for CS minorities at Brandeis for Computer Science minorities at Brandeis.

He opens CS² and is able to see application users who are all minorities in Computer Science at Brandeis. After entering his current class information, he sees that there are three other black students in COSI 11a with him. He sends them a message introducing himself and immediately asks to form a study group as early as possible in order for them to all succeed in their first college Computer Science course.

Scenario 2:

Jessica is a Freshman who just declared CS major, she is a Chinese student, she's taking 11A and 15A this semester, she has concerns about which course to pick next semester, for example 12B has two sessions, should he take it with Tim or Pito. Also, because this is her first semester here at Brandeis, She did not know too many sophomore or junior students who have took these course before. So he need assistance in understanding the course options better, and linked it to his long term and short term goals. She visit our web app CS² and is able to see users who are also targeted students with similar background. After entering her background info and course info for this semester. The system immediately recommender a list of five student for her. All with the similar international background, and are female students who have taken the same courses in their freshman year, three of them are sophomore, and two of them are junior students. Then she can choose to "send a friend invite" to them and get connected. This step is similar to the linkedin experience now. But after they are connected, they can schedule in person meetings in vertica lounge, talking about the course selection in a same time, same place co-presence situation. And then after the meeting she write down the meeting notes and share with the Junior student Amy she met, together with a thank you email. Amy then review it and add two bullet points to the meeting notes. Now Jessica is much more confident about her course selection for the coming semester.

Scenario 3:

Emily is a first-year international student at Brandeis University. This is the first time she's been abroad and everything seems overwhelming for her now. Though hasn't made up her mind about what she's going to major, Emily decides to take COSI 11A since she has always been interested in coding and interactions with computers. However, due to difficulties in language, she's having troubles in classes and doesn't know who to talk to. She is also feeling too shy to go to the TA or professor's office hour since she's not confident with her oral English. Obviously, she doesn't want to embarrass herself in front of anyone, and she knows she'll be terrified if she makes any mistake. Frustrated but not losing hope, Emily browses the Computer Science Department website to see if there's any resource she could possibly use. And she finds out CS², which is an app designed to provide support for minority students in CS at Brandeis, including international girls like her. She immediately signed up with her Brandeis account and joined the international group and female group on the app. Later she finds out a post from the blog

section in the app, written by a junior student Venus, who is also an international female student and shares her own experiences with the CS program at Brandeis in the blog post. After reading the post, Emily feels quite related to what Venus has been through and sends an “in-message” to Venus to see if she can meet her in person. After a while, Emily gets a response from Venus expressing a willing to offer any help to her along her career at Brandeis. Now Emily doesn’t feel that anxious about things around her anymore, and she’s constantly making new friends on the CS² platform and also gets better in her COSI 11A class.

4. Project Plausibility

As stakeholders and potential users ourselves, we understand the problem space at its most intimate level. We are also constantly surrounded by students who serve as our ideal users which we can easily gather data from. We know the users so well and even know the existing solutions are not perfect, we will apply what we have learned from this class to progress and achieve our goals. By creating this project, we are helping the faculty in the Computer Science department also understand the problem space better by providing concrete data.

Also this model can start with the minority groups in computer science and later spread to other STEM departments, and other universities and colleges. So it’s scalable, and for the first step, it seems to be the right size and doable within our HCI term project timeframe.

5. Development Plan

Week 1(11/6):

Identify subjects utilizing focus group and conduct interview with subjects, identify user needs and requirements based on Interview feedback, develop scenarios, and try to develop a first draft paper prototype based on the developed scenarios.

Week 2(11/13):

Conduct first round of observations with subjects, see how subject use the paper prototype, identify any unforeseen possible user requirements and existing bugs/possible improvements, at the same time use questionnaire to get more detailed and quantified feedback on paper prototype. Modify first draft paper prototype to create second draft prototype using mockup.

Week 3(11/20 short):

Conduct second round of observation with subjects and see how subjects use the second prototype, identify any unforeseen possible user requirements and existing bugs/possible improvements, at the same time use questionnaire to get more detailed and quantified feedback on paper prototype.

Week 4(11/27):

Conduct large-scaled questionnaire to get more feedback on the usability of the app, finalize paper prototype. Finish any undone goals, collect all paperwork and write up final report.

6. Test Subject Agreement Document

Hello! Thank you for agreeing to participate as a user test subject for <Project Name>. We really appreciate you taking the time to do this and for helping us secure that A+! First and foremost we want to explain that this contract **does not** serve as a formal legal document, but it **does** serve as a binding contract with us stating that you are willing to participate in various interviews, discussions, observations, and data gathering sessions.

You are invited to participate in a research project being conducted by the <Project Name> Developer Team. In simple terms, we hope you will use our application to:

- 1) Find and connect with minorities in computer science at Brandeis
- 2) Gain access to professional development and computer science related resources
- 3) Find tutors or study groups

The <Project Name> Developer Team will be able to use your responses and performances in your participation in various interviews, discussions, observations, and data gathering sessions. Please note that you **do not** have to agree to all of this, and you may **stop** participating at any time.

You may sign by checking the boxes below, and signing your name afterwards. Please note that it's your decision and you **do not** have to check all boxes.

☐ I allow any comments, opinions, and information I provide via interview/discussions/questionnaires to be recorded and analyzed by the <Project Name> Developer Team.

☐ I agree to be the subject during several observations performing tasks as instructed and being observed.

Please choose the option you prefer from the three below:

☐ I allow the interview/discussion/observation to be **video recorded**.

☐ I allow the interview/discussion/observation to be **audio recorded ONLY**.

☐ I **DO NOT** allow the interview/discussion/observation to be video recorded or audio recorded.

Please note that all personal information will be kept private and all comments/opinions will be quoted anonymously if they ever appear in public.

Name:

Email:

Signature:

Date: