Student Summer Scholar Program Application Examples

A3. Mentorship/Apprenticeship Plan

Example 2

The overall student-centered goal is to give the students an authentic software development and design experience. As there are two student scholars from different disciplines, we have tried to differentiate the mentoring between them and to tailor the mentoring to the students by asking them what kind of mentoring they would like and what motivates them to do their best work. Student [redacted] indicates that she likes to see [redacted] work move from ideas and sketches to reality and that [redacted] is a reasonably independent worker, but likes getting regular feedback on progress and constructive criticism. Student Nguyen indicates that [redacted] would like some freedom to explore but believes that faculty mentors should also give [redacted] specific goals and honest feedback, so [redacted] can understand the tasks and [redacted] performance. We are confident that our mentoring plans and being aware of our students' mentoring expectations will bring out their strengths and allow them to flourish this summer.

CIS Mentoring (Mentors [redacted] and [redacted] for Student [redacted])
The student has taken CIS 350 (Intro Software Engineering) and will take CIS 371 (Web Application Programming) this Winter; this will prepare [redacted] for the project in terms of familiarity with software development in general and the web development tool VueJS in particular. [redacted] will have done programming projects in those classes and others, but they focus on particular concepts related to a course and their scope is limited. It is almost impossible for students to gain industry-like experience from completing class programming projects. Spherical Easel is designed to be an online mathematical tool with the same caliber as other professional grade tools like GeoGebra and Desmos, hence it must serve the needs of real users from different nationalities and levels of mathematical proficiency. This is a much larger challenge that we will engage the student in. We plan to use the technique of gradual release emulating the mentoring relationship between senior (the faculty mentors) and junior developers (the student scholar) that is typical of the software industry. During the onboarding phase, a senior developer provides an intensive walk-through of the entire software architecture, shows the development tools, and assigns a warm up task to allow the junior developer to get acquainted with the entire system. Later the junior and senior developers (along with the design team in this project) will jointly decide the plan for the scholar's time, and eventually, the junior developer will perform tasks more or less independently that support the team's vision for the software. We recognize that this is far from a linear process and expect setbacks and frustration that is a natural part of the development process even in the real world. The mentors will be there to guide the student through this process and offer support and feedback in frequent meetings. We firmly believe that this will lead to intellectual independence on the part of the scholar as we have seen this process in action when Mentors [redacted] and [redacted] have mentored groups of students in CIS 467 (Capstone) for the past three semesters (and one in progress) for smaller projects related to Spherical Easel.

VMA Mentoring (Mentor [redacted] for Student Cline)
As a mentor on the software design side of the Spherical Easel project, my mentoring plan is twofold: to gradually empower the student toward self-sufficiency in visual research applied to software design and to support the student in navigating the conversations around goals, feasibility,

and implementation with the other members of the project team. Initially, we will actively collaborate on auditing the existing application, collecting data on its features and goals, and collectively establish a series of initial recommendations to the design. The student will work with the implementation team (in the context of the team's meetings) to communicate our recommendations. When interacting with the implementation team, the student will receive guidance on how to collaborate with software development teams. More importantly, I want to foster a culture of co-creating the final product, where the design and development sides provide input and suggestions toward a shared goal. Such practice is essential when working on software design and development in the industry setting.

While the implementation team works through the recommendations, it is expected that the student and mentor on the design side will need to provide further input on user interface elements, as well as to test potential alternatives for a solution in case development encounters a problem. Additionally, the student will also continue to work on prototyping other aspects of Spherical Easel. Toward the end, the mentorship plan on the design team aspires to develop a productive culture of collaboration and rapport with the implementation team, when the two take ownership of both sides of the project. I have past experiences in developing design prototypes in website design, and the student will have completed coursework in general design principles (ART 150), typography (ART 210 and 215), and typographic systems (ART 310); the student will also have acquired some proficiency in software design by the end of the Winter semester, after completing a GVSU user experience and user interface design course (ART 214) that addresses this topic.

Joint Mentoring

We are going to be intentional about mentoring at the entire team level as well. We (all the mentors) will model the expectations for teams working collaboratively; we will attempt to build a community where everyone feels included in design and development decisions. We will employ active listening and dialog from our divergent perspectives. We will have entire team (all students and faculty) meetings at least once a week and, at the start of the program, daily meetings of the individual CIS team ([redacted] and [redacted]) and the VMA team ([redacted] and [redacted]). Mentor [redacted] will attend all entire team meetings and many, if not all of the individual team meetings and [redacted] will facilitate any necessary communication between the teams that must occur between the regularly scheduled entire team meetings. At all of the meetings we will share the progress made since the last meeting, discuss the current state of the project, and set goals for the next meeting. Our goal is to create a community of developers and designers as described in Cartwright (2019), and to provide regular opportunities to share both direct and indirect feedback about student progress.

Communication Mentoring

During the program, our frequent meetings will enable us to emphasize verbal communication. At each entire team meeting, we will ask the students to summarize their work in a way that the entire team of specialists and non-specialists can understand. This way the entire team can have a dialog about best communication practices. To improve their written communication, we will require both scholars to submit an expanded biweekly journal report. In particular, we will ask them to expand the question "Provide a brief description of the research activities you have done over the past two weeks. (ex: reading journal articles, data collection, data coding, technique practice, etc.)"

into a more detailed report – perhaps around a page. Each scholar will send this to their team leader (Mentors [redacted] or [redacted]) and to Mentor [redacted]. The mentors will read the report, comment on it and return it to the scholar who will be expected to revise their report, if necessary, and submit it the next week (when there is not a biweekly report due). At the end of the program we will work with each scholar to assemble a final paper from the submitted journal reports and to prepare a poster for use at [redacted] event. We will discuss the purpose of the poster, give feedback on drafts of the poster, and help them develop talking points about their work.