TECHNICAL PORTION OF PROSPECTUS

BENJAMIN BROWN, RAHAT MAINI, JOHN WATKINS, HENRY WEBER

Development of the overhead paper note scanner, which we will refer to as “Lamp” in this document, begins with recognizing the weaknesses of the competing note-taking utilities and incorporating solutions to them. Pen/paper note-taking is prone to missing minute details and nuanced info in favor of summarization due to the relative slowness of handwriting; tablets lack the zero input lag of physical note-taking while introducing distractions (Paul, 2013); laptops by virtue of allowing incredibly fast input push students to transcribe a lecture rather than retain information (Staff & Doubek, 2016) and also distract neighboring peers (Sana, Weston, & Cepeda, 2012) in the attempt to multitask (Mueller & Oppenheimer, 2014); and smartpens limit users to using certain paper and pen types. There is no clear winner in terms of the best method for note-taking, with shortcomings present in each method alongside any benefits.

Lamp looks to solve these shortcomings in various ways. Through a camera positioned in the head of the Lamp, student notes are constantly photographed throughout lecture. A far-field microphone acts as a lecture recorder, with the audio later transcribed into searchable text for later review. These are the basic pillars of this technology: capture, record, and digitize.

The on-board Raspberry Pi (a form of computer) collates these inputs and uploads them to a server accessible via a web application by the student later when studying their notes. This web app automatically organizes student notes by classroom and chronology, shows the transcribed audio associated with each lecture, and even displays a history of each page, allowing students to scroll through and see what was being said exactly by the professor at the time of writing a certain sentence or drawing a stroke on the paper.

It is of utmost importance that the experience of using Lamp is invisible to the user beyond logging into it to identify who they are (a process done by a near field radio frequency scanner on-board that reads the student ID card). We strongly believe the actual act of learning within a classroom should be free of distraction and extraneous tasks non-essential to the process of learning itself. The classroom is a place of absorption and initial exposure, a critical foundation that later is expanded on via the explicit use of digital supplements that go beyond pen and paper. The forcefulness of handwriting combined with the assurance that the lecture audio is being kept offers a clear advantage over keyboard note-taking, where a compromise is made to copy everything, harming long term memory retention (Paul, 2013). There is no behavioral change to adapt to the technology, and no friction in any process (such as a start or stop button to record, a next page button to scan, batteries to charge, or a Facebook tab one click away).

As a minimum viable product, we will produce one working lamp and a companion web app. The following are our requirements in the form of user stories:

- As a student, I will be able to sign up for a Class Scribe account through the web app
- As a student, I will be able to enroll my ID to my Class Scribe account through Lamp
- As a student, I will be able to sign into my Class Scribe account on Lamp (after ID enrollment) and on the web app
- As a student, once I sign into Lamp I will have it scan my notes and record the lecture audio around me
- As a student, I will be able to see my scanned notes on the web app, hear lecture audio, and read the transcription of that audio

- As an administrator, I will be able to assign a class, classroom, meeting time, and lamp serial number through the web app