Final Project Proposal

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Team Members:
Member 1: Angie Near **Email:** angienr872@purdue.edu
Member 2: Sam E. Conductor **Email:** samecond976@purdue.edu
Member 3: Saul Duringiron **Email:** saulder875@purdue.edu
Member 4: Ray D. O'Signal **Email:** raydsig274@purdue.edu

1.0 Project Description:

Hand for the Deaf is a project which accepts text in the form of USB input or onboard files and converts the input into a signed language of the user's choice. Actuation of the signed language is performed using a robotic hand. The device will feature onboard storage, as well as interfaces to allow USB input. Additionally, the device will feature an LCD display and simple physical user interface to allow the device to operate in standalone operation.

2.0 Roles and Responsibilities:

Saul Duringiron has had substantial leadership experience, having lead his ECE362 junior design team. In addition, he has significant hardware design abilities, particularly in the mechanical realm. For this reason, Saul will be the team leader and handle mechanical aspects of our project, such as product packaging design and fabrication, as well as construction of the team's printed circuit board.

Sam E. Conductor has had significant involvement in the biomedical engineering community at Purdue and, as such, has had significant involvement in electrical design and fabrication. Sam is thus best suited to be our team's electrical engineer, handling things such as the design of the electrical schematic and PCB layout, as well as electrical requirements.

Angie Near has had significant theoretical experience in her time working on software internship projects at NASA. Her background makes him well-qualified to be the software engineer for the team, working on things such as core firmware development and control of the robotic hand.

Ray D. O'Signal has had significant experience coordinating diverse teams of people, including some background in software development. He shall be the systems engineer for the group, helping to ensure requirements are well captured as well as ensuring the project systems work together effectively. Additionally, he is expected to help out with hardware and software tasks where and when the need arises.

2.1 Homework Assignment Responsibilities

Homework responsibilities are detailed in figure 1, below.

Design Component Homework		*Professional Component Homework*	
4-Packaging Design and Specs	RS	3-Design Constraint Analysis/Parts List	RS
5-Hardware Narrative and Prelim Schematic	SD	10-Patent Liability Analysis	SD
6-PCB Narrative and Prelim Layout	SC	11-Reliability and Safety Analysis	SC
9-Software Design Narrative	AN	12-Social/Political/Environmental Analysis	AN

RS : Ray D. O'Signal AN: Angie Near SC: Sam E. Conductor SD: Saul Duringiron

Figure 1. Assignment Responsibilities

3.0 Estimated Budget

An estimated budget for Hand for the Deaf is provided in figure 2, below:

Mechanical	**Estimated Cost**
Robotic Hand	$900.00
Packaging Materials	$100.00
Electrical	
Project circuit board	$50.00
Electrical components	$50.00
SD Card and misc. cables	$40.00
Other	
Shipping costs	$100.00
Total Budget	$1,240.00

Figure 2. Estimated Budget

The project costs shall be split equally among the four team members. Purdue is expected to cover the cost of the circuit boards, in addition to a $300.00 allotment for parts and other project needs. Each team member is thus expected to contribute an estimated $222.50 towards the overall project success.

4.0 Project Specific Success Criteria

The following project specific success criteria are proposed for Hand for the Deaf:

1. An ability to receive and interpret user input from a USB input device
2. An ability to read sign language files and library data stored on an SD card
3. An ability to store files to an onboard SD card using the USB interface
4. An ability to create signed language letters using a robotic hand
5. An ability to change the display information on the LCD display, such as selected sign language and selected language file.