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BME 484 Biomedical Engineering Capstone Design
02 AAC Project Proposal

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Project Title: Electromyographic Phone Controller for Patients with Severe Motor Impairment

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Abstract: Smartphone based Augmentative and Alternative Communication (AAC). The goal is to develop affordable Communication devices for individuals with limited mobility and inability to speak or sign. Communicating with patients who suffer from severe impairment is always a challenge. This project hopes to provide a simple, affordable AAC solution that could be used by nearly any patient.

Innovation: The innovative approach to this project is making this technology affordable and compatible with existing Android technology, providing patients of these disabilities with a convenient way to communicate, regardless of the disability type or severity.

Materials: Gel electrode, microprocessor, components, signal amplifiers, USB 3.0 - USB C converter OTG, casing.

Subtasks: Test Designing circuit, programming microprocessor, integrating android, testing.

Timeline: Test android single button accessibility **Week 3**
             IRB **Week 3**
             Test old hardware **Weeks 3-4**
             Develop working circuit on breadboard from previous lab **Weeks 5-7**
             Integrate serial port communication **Weeks 8-9**
             Streamline design **Weeks 10-11**

BME Capstone Design General Timeline

Task	09/11	09/18	09/25	10/02	10/09	10/16	10/23	10/30	11/06	11/13	11/20	11/27	12/04	12/11	12/18	12/25	01/01	01/08	01/15	01/22	01/29	02/05	02/12	02/19	02/26	03/05	03/12	03/19	03/26	04/02	04/09	04/16	04/23	04/30	05/07
1. Team & topic	█																																		
2. Design		█	█																																
3. IRB application (if applicable)			█	█	█	█	█	█																											
4. Mid-year progress report										▒		█	█	▒																					
5. Project prototype			█	█	█	█	█	█	█	█	█	█																							
6. Testing & improvement													█	█	█	█	█	█	█	█	█	█	█	█											
7. NEBEC Conference paper													█	▒	█	█	█	█	▒																
8. Grant proposal (TBA)																												█	█						
9. NEBEC Conference (TBA)																														█	█	█			
10. Final Report																																█	█	█	▒

References:

Commercial Product electromyography controller, designed for users with full mobility:
Myo Controller - https://developer.thalmic.com

DIY Muscle Sensor Circuit for Microcontroller
http://www.instructables.com/id/Muscle-EMG-Sensor-for-a-Microcontroller/

Enrico Costanza, Samuel A. Inverso and Rebecca Allen: Towards Subtle Intimate
Interfaces for Mobile Devices Using an EMG Controller. *Liminal Devices*