Unguvu: Enhancing cerebral palsy mobility through wearable technology

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1 Background

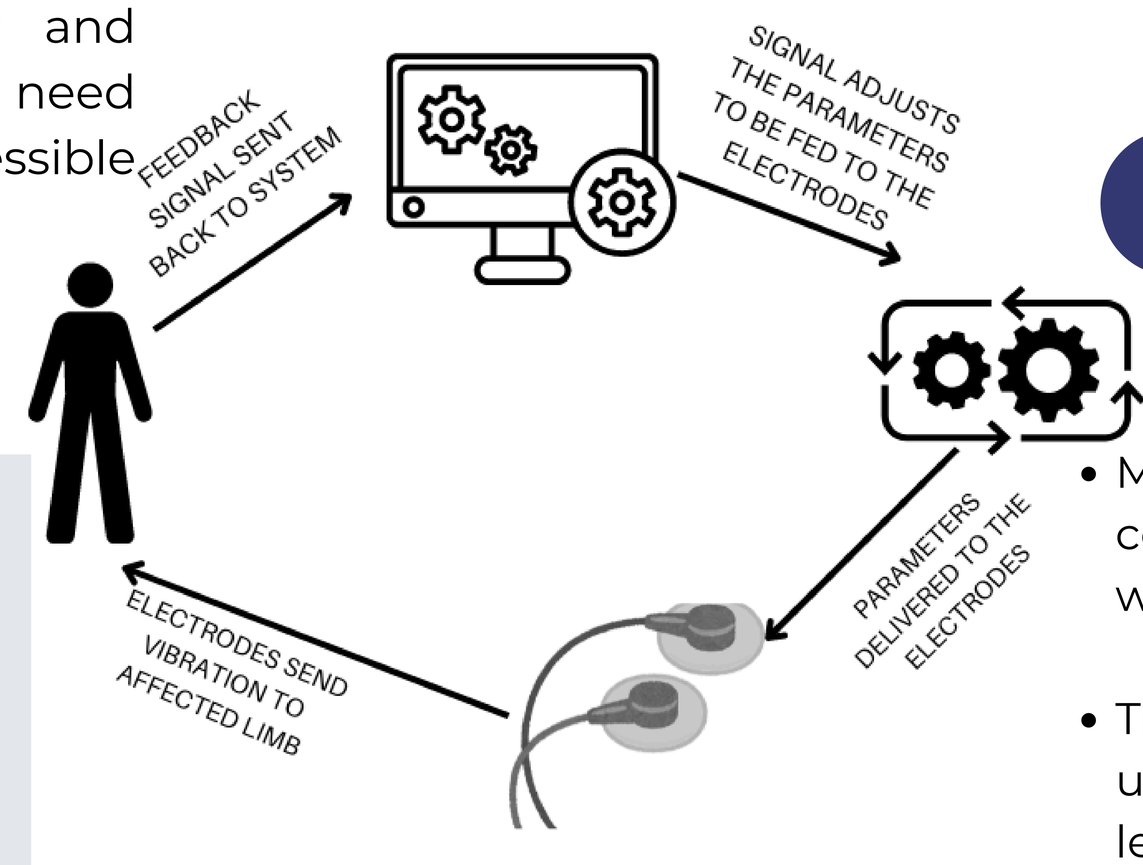
- Cerebral palsy is caused by abnormal brain development, affecting movement, muscle tone, and posture.
- Challenges include poor balance, muscle tone, posture, and reflexes.
- Current treatments like surgery and physical therapy are costly and inaccessible, highlighting the need for a low-cost, easily accessible device.

2 Aim

This project's aims to:

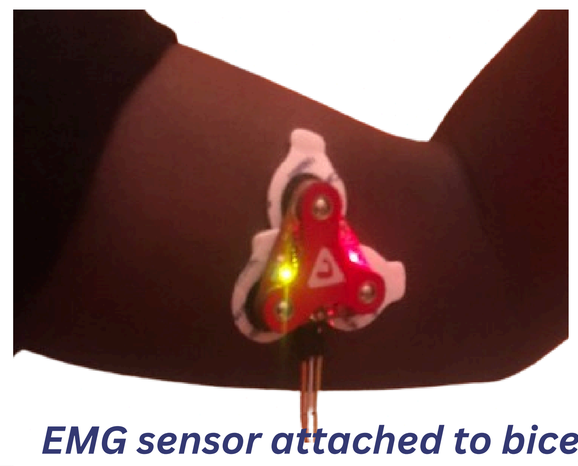
- explore development of a patient-friendly device that is both affordable and readily accessible, ultimately promoting greater independence among users.

3 Method

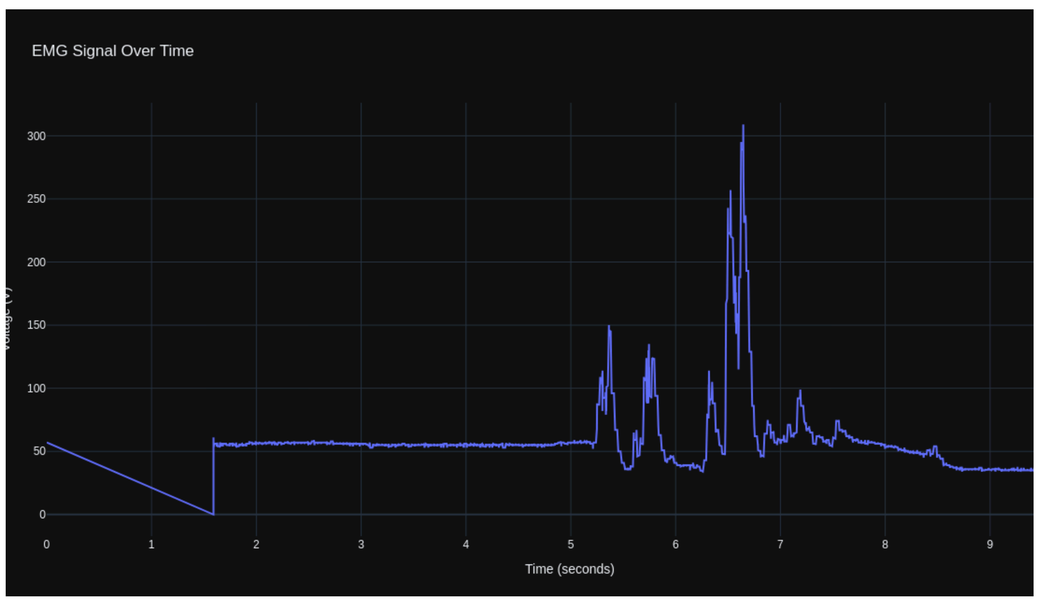


A flowchart of the system

- Muscle signals are collected from a person without cerebral palsy.
- The collected signals are used to train a machine learning model.



EMG sensor attached to bicep



Electromyography graph of the hand in motion

- The model learns the signal parameters.
- This training enables the feedback system to accurately output the signal parameters.

4 Expected outcome

- Development of a patient-friendly device that is affordable and readily accessible.
- Promotion of greater independence among users.
- Implementation of a feedback system to store patient records and send them to the doctor for better monitoring.

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References

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2. **Marquez-Chin, C., & Popovic, M.R. (2020). Functional electrical stimulation therapy for restoration of motor function after spinal cord injury an stroke: a review. BioMed Eng Online, 19(34). https://doi.org/10.1186/s12938-020-00773-4**