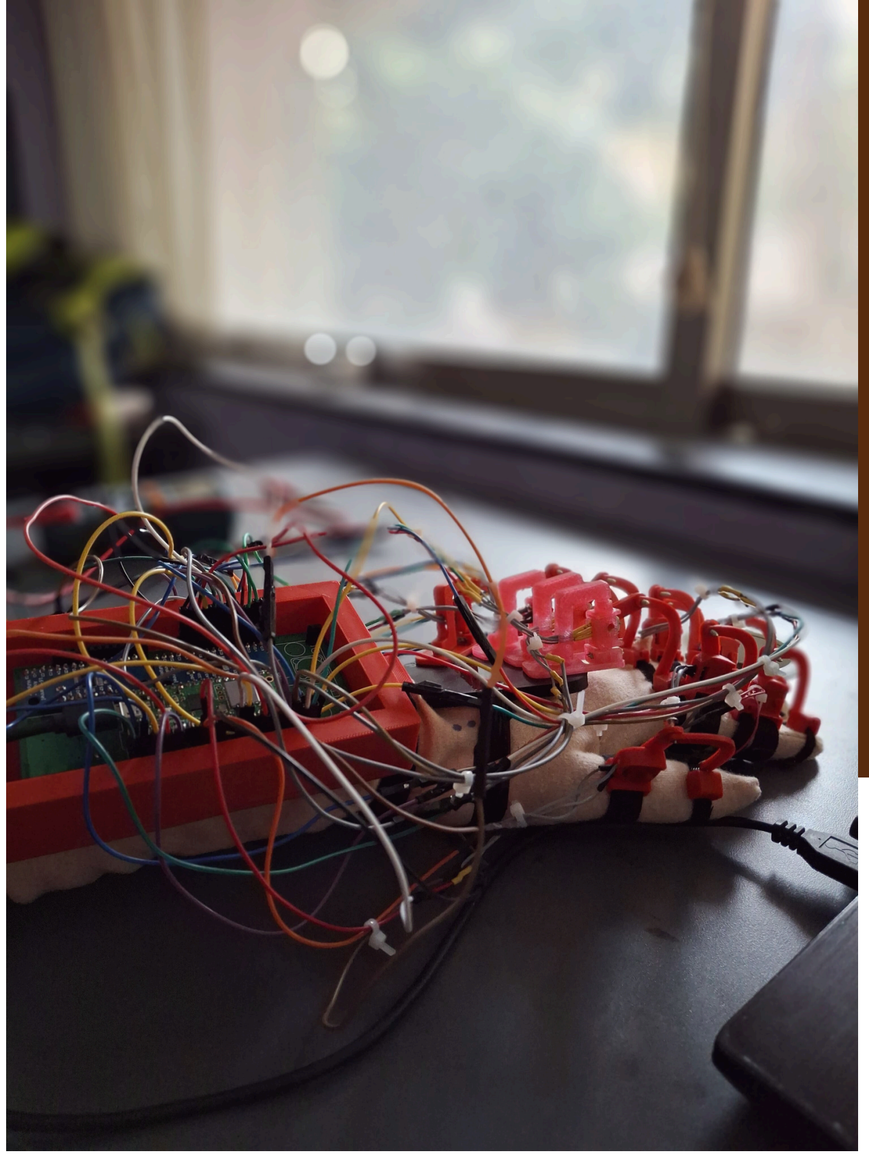
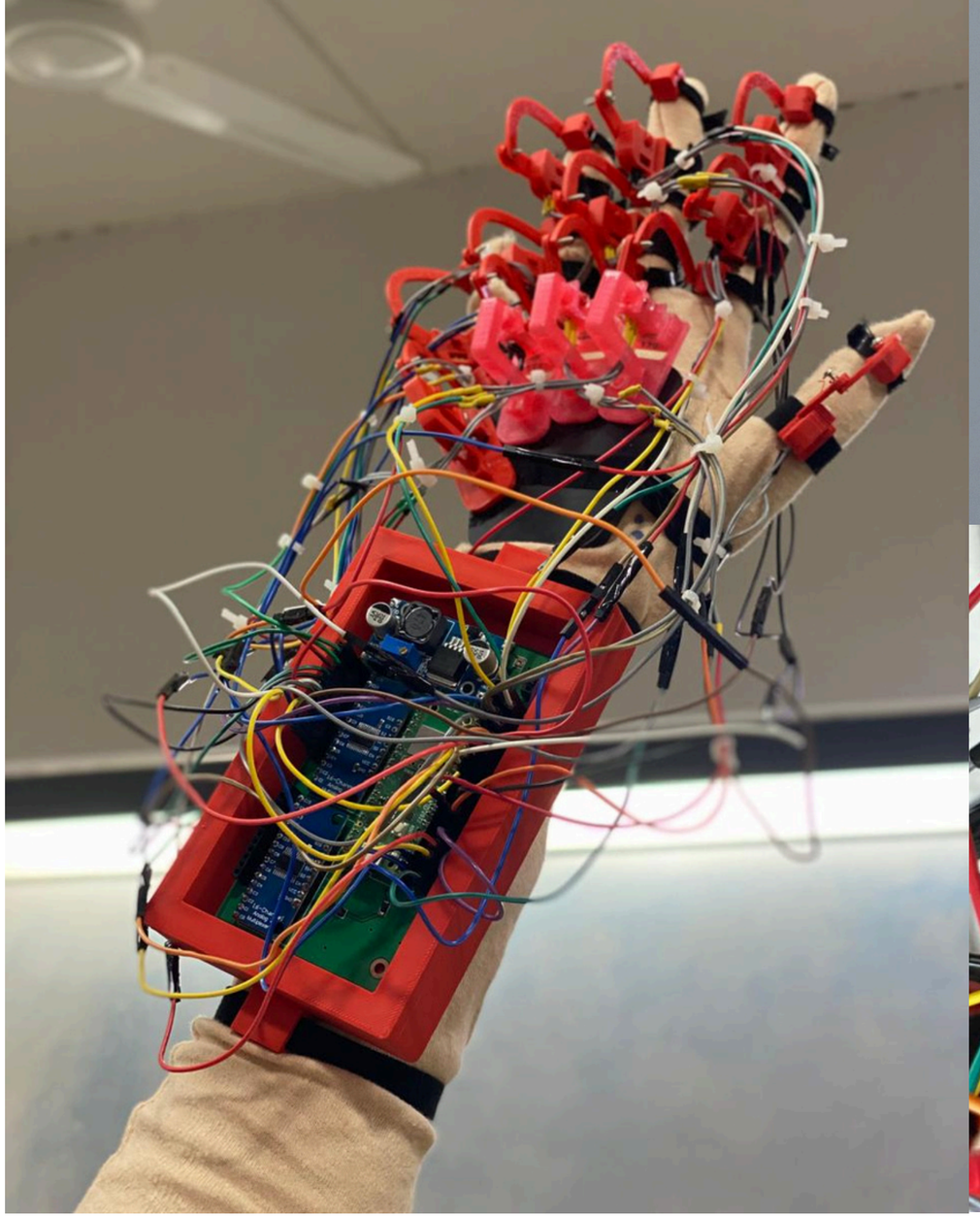
P-12 MON - 16

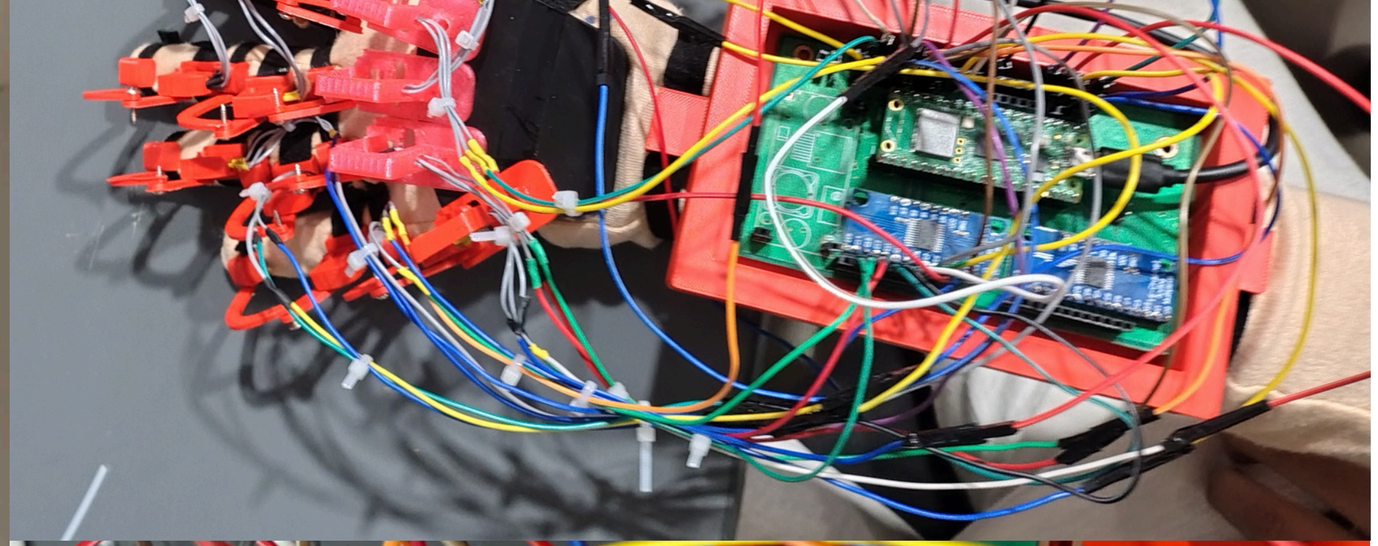
EXOSKELETON GLOVE

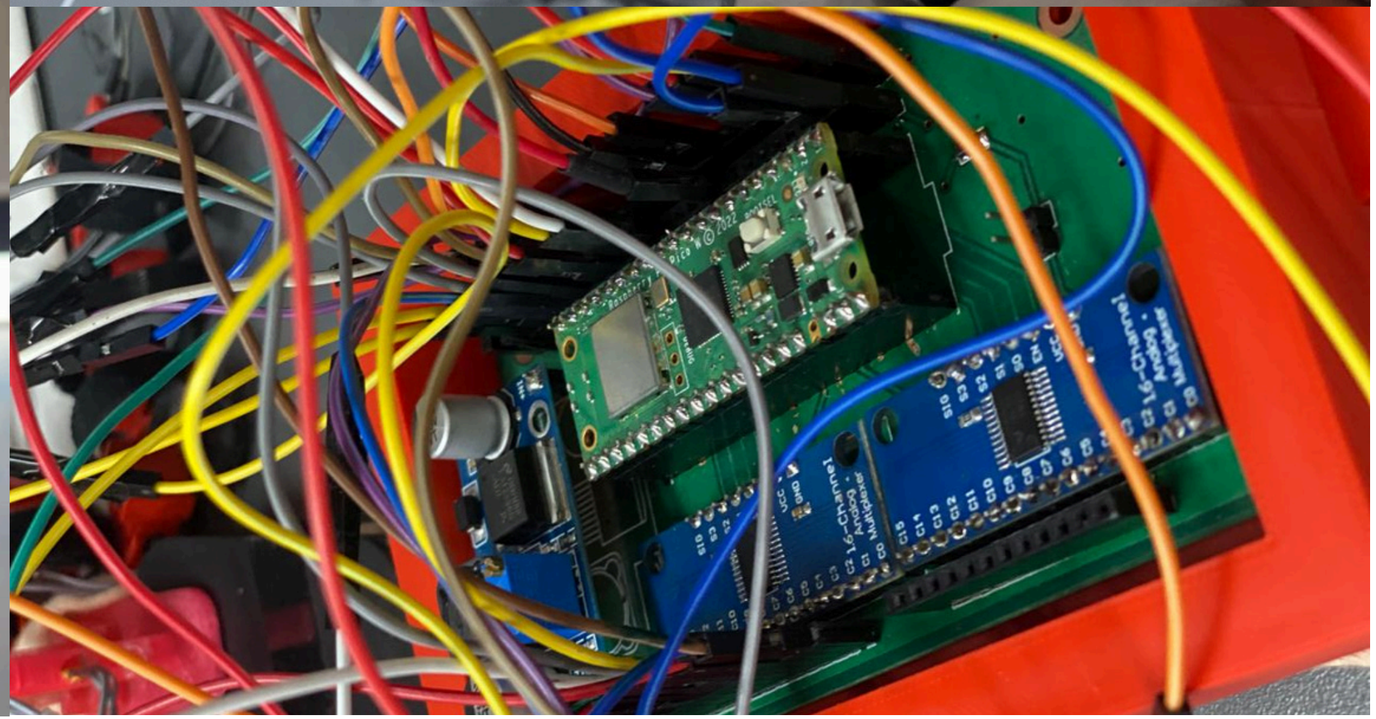
- Glove to **replicate hand movements** virtually for visualization.
- For **gaming equipment**, and **stroke-paralysis rehabilitation** centers.
- **Multiple gesture functionalities** in gaming, assists paralysis patients to **regain control of movements** using exercises.



Key specifications and requirements proposed at the beginning of semester	Status at the end of Semester	Remarks / Justifications
Wearable Functional Exoskeleton Glove	Complete	Wearable (takes some time)., Perfectly functions as per requirements and is an exoskeleton
Wireless Data Transmission To Laptop	Complete	We are transferrring data wirelessly using the Wifi module on the rpi pico using UDP protocol
3D Hand Simulation on Laptop	Complete	We used hand model on blender and used unity to simulate it.
Joint angles at 1 degree Precision	Partially complete	The exact function which maps the physical mechanical angles to the angles on the virtual model was very nonlinear due to rigid movements in some parts of the mechanical components and also the mapping dynamically changing which would need a lot more iterations. Sometimes small angles were mappped to larger ones and smaller angles were mapped to larger ones.
Have flex sensors, force sensitivity resistors,/pressure sensors	Incomplete	While making the proposal, we thought of using the flex sensors for the angle measurements at each joint which we did not do as the angle measurement wouldnt be accurate and it would be a multiple movement to single value mapping which would be a hard problem to tackle, instead of which we decided to use rotary encoders. Force sensitivity resistors/pressure sensors were supposed to be an extra feature which we did not go ahead with due to a huge amount of wiring and we did not see the use of doing it.
Battery life of 30 mins	Complete	We are using rechargable LiPo battery which has a long enough life and it lasts long enough since our glove draws very less power.
Portable	Complete	It is wearable and you can move around with it, and the simulation works as long as you are in the Wifi range







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