

PROJECT OVERVIEW: Neural Tapping (EXP-004) Subject: EMG Edge AI Decoder

Objective: *To translate noisy surface electromyography (sEMG) signals into discrete, actionable digital commands for bionic actuator control.*

Methodology: *We attached low-cost EMG sensors to the forearm to capture raw muscle electrical activity. Signal processing (bandpass filtering, RMS extraction) is handled via C++. The clean signal is fed into a TinyML neural network deployed directly onto a microcontroller (Edge AI), bypassing the need for cloud compute. It classifies individual finger movements (intent) in under 15 milliseconds.*

Current Status: *Ongoing refinement. Latency is acceptable, but signal-to-noise ratio drops when the subject sweats excessively.*

Lab Notes: *The microcontroller reads the subject's intent before the limb even fully moves. We are quite literally intercepting their nervous system. Needs more copper wire.*