OpenAssistive — Bill of Materials (BOM) v1.0

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Non-profit open social technology initiative.

Scope

Component list for OpenAssistive prototype v1 focused on low cost, modularity, and global availability.

Core Compute

Raspberry Pi 4 (preferred) or Pi 3B+. MicroSD 64–128GB. USB audio adapter.

Cane Sensors

2× ToF sensors (VL53L1X preferred). ESP32 or RP2040 microcontroller. Small protective housing.

Haptic Feedback

Coin vibration motors (2–4 units) and small driver board or MOSFET/transistor stage.

Camera

Pi Camera Module or USB wide-angle webcam. Strap-mounted enclosure.

Audio

Mono earbud or bone-conduction headset. Lavalier or inline microphone.

Power

20,000 mAh USB power bank with 3A output and reinforced short cable.

Connectors & Wiring

Magnetic breakaway connector, flexible wire, JST connectors, heat-shrink tubing.

Textile Integration

Vest or harness with cable routing, industrial velcro and elastic straps.

Estimated Cost

Prototype build estimated between 180–300 USD depending on component choices.

Replacement Philosophy

All parts must be replaceable, non-proprietary, and globally sourceable.