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LoRaWAN Implementation Block Diagram

End Device (Helmet Sensor) → **Sensor Readings** → Impact Calculations → Isolate Impacts over specified threshold → LoRaWAN Gateway ← ChirpStack Gateway Bridge → ChirpStack (MQTT Broker)

Paired Connection through OTAA (DevEUI, LoRaWAN MAC, Device Root Keys)

ChirpStack (MQTT Broker) → Uplink/Downlink Payload → Network Server

Network Server → Hosted Application Server

Hosted Application Server → Redis Datastore (Non-Persistant Storage)

Hosted Application Server → PostgreSQL (Persistant Storage)

[Optional] Local Device (Phone) ← Impact Alert Ping