

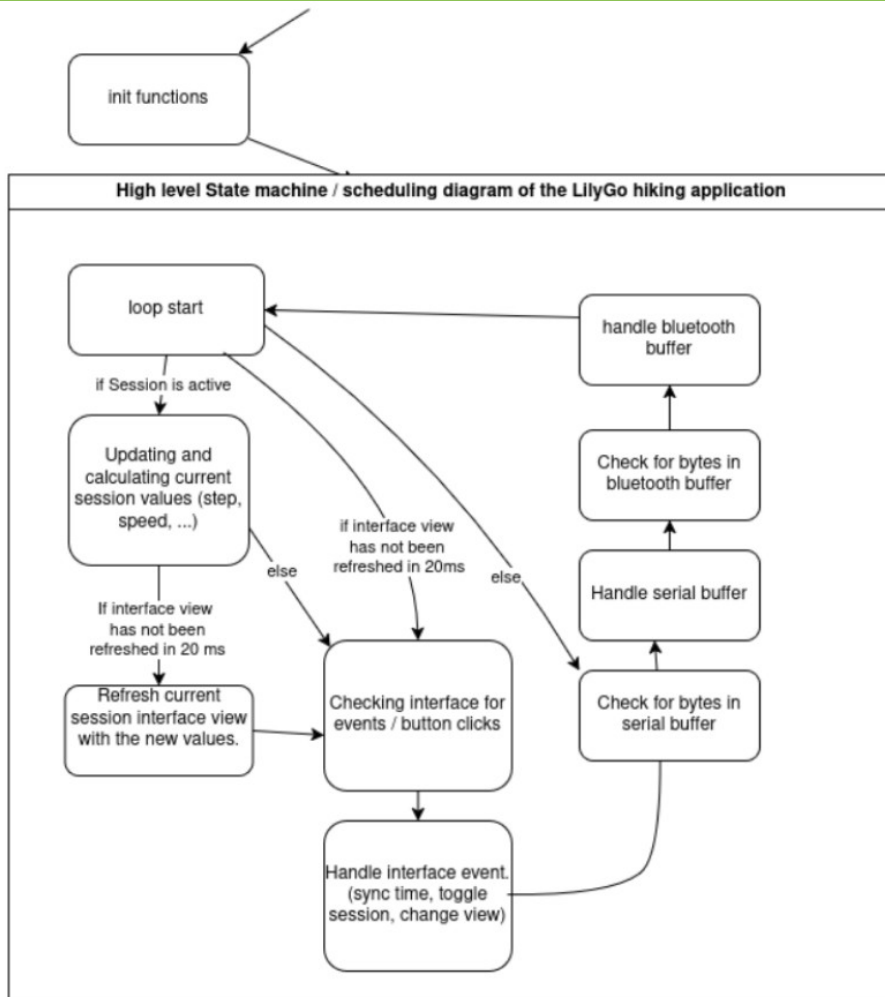
# Live demo



# - Hiking Watch Application – technical overview



# Watch firmware

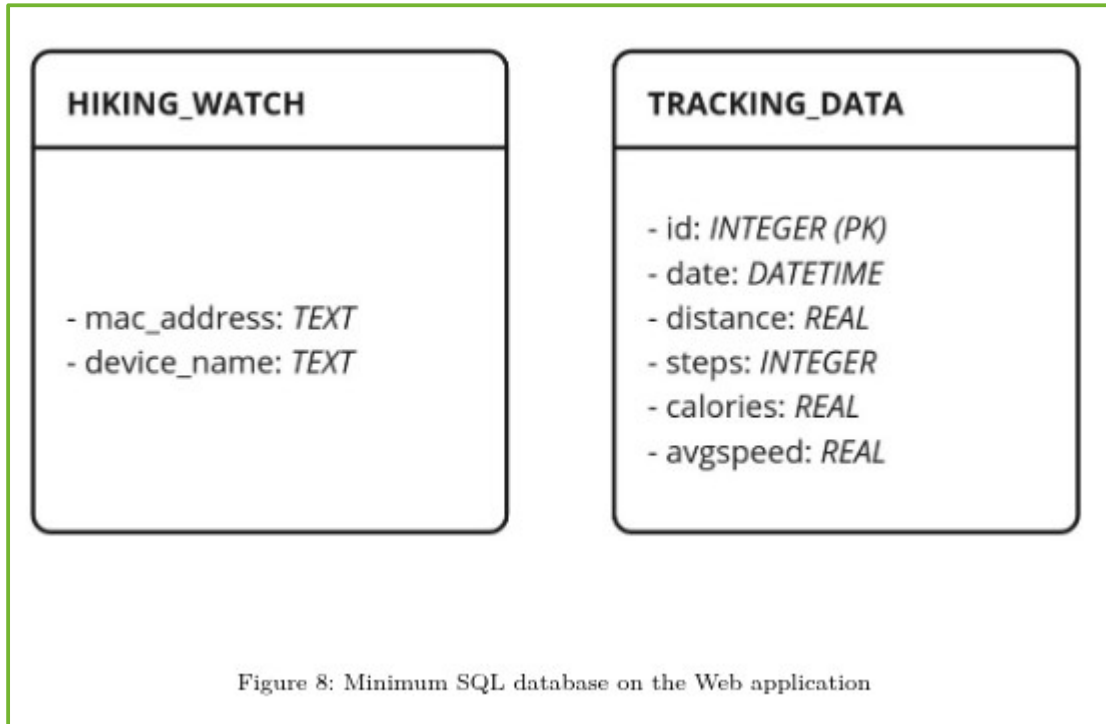


Some noteworthy features:

- GPS used for estimating distance
- No hardcoded MAC address.
- Supported devices: V2 and V3.
- Save multiple sessions



# Web backend



```
class BTQuick(object):
    def __init__(self):
        self.start_bt()

    def get_mac_address(self):
        return self.bt_connected_device_mac

    def destroy(self):
        ret = check_output(["bluetoothctl", "remove", self.bt_connected_device_mac], text=True)

class Twatch(object):
    def __init__(self, bluetooth_id = "HIKING_WATCH", bluetooth_mac=""):
        self.bluetooth_id = bluetooth_id
        self.bluetooth_mac = bluetooth_mac

    # Search for twatch and update mac address
    def

class TrackingDataRepository:
    """A class for managing data queries related to user objects
    """

    def __init__(self, connection) -> None:
        self._connection = connection

    #
    def fetch_device_data(self) -> tuple[str, str] | None:
        return [mac_address, device_name]

    def update_watch_data(self, mac_address, device_name):
        self._connection.commit()

    def fetch_all_tracking_data(self) -> tuple[list, list]:
        return columns, rows

    def add_entry(self, tracking_data: TrackingDataEntry) -> None:
        logger.debug("END")

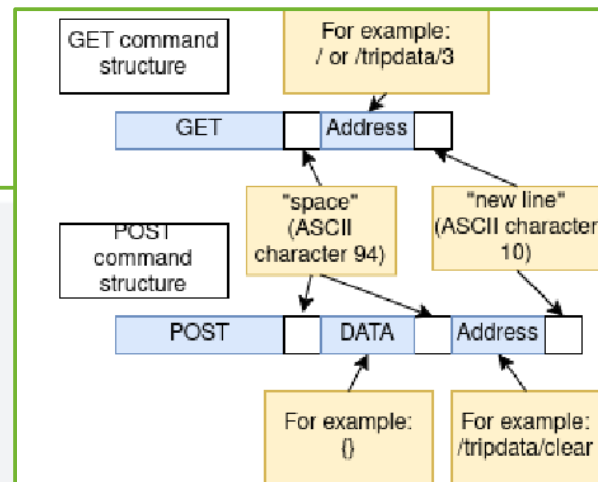
    def top_entry_for_distance(self) -> tuple | None:
        return row

    def top_entry_for_speed(self) -> tuple | None:
        return row
```

# Synchronization

GET /tripdata/4

```
{
  "Context": "/tripdata/4",
  "Description": "Individual trip data overview.",
  "Data": {
    "ID": 4,
    "StartTimestamp": "0",
    "EndTimestamp": "0",
    "Steps": 0,
    "AvgSpeed": "0.000000",
    "GeoLocationPath": null
  }
}
```



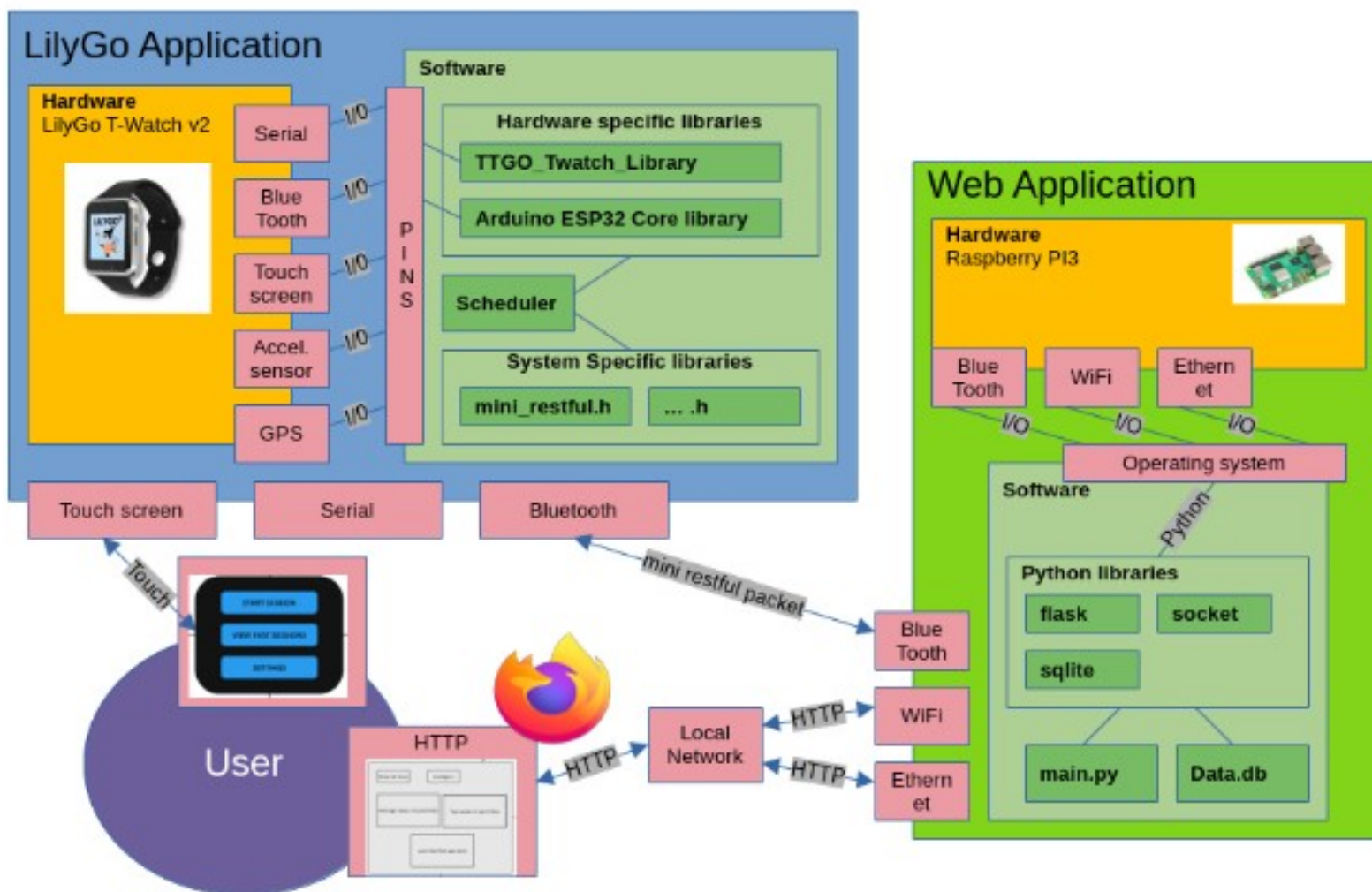


Figure 1: Block diagram showing the major components of the full system and the interconnections between its components.

## References:

<https://github.com/elec-e8408-mini-project-2025/project-documentation>

<https://github.com/elec-e8408-mini-project-2025/lilygo-hiking-application>

<https://github.com/elec-e8408-mini-project-2025/hiking-tour-assistant-data-storage>

