

Capstone Project

OBD-II Buddy

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Current Market Sample

Toyota TechStream



FIXD App and Sensor



Carly App and Sensor



Snap-On Solaris



Current Market Pricing

FIXD App and Sensor



\$ 128.99

Carly App and Sensor



\$ 195.11

Snap-On Solaris



\$ 3,485.00

Toyota TechStream



\$ 6,229

The prices of these tools vary, as they grow with capability

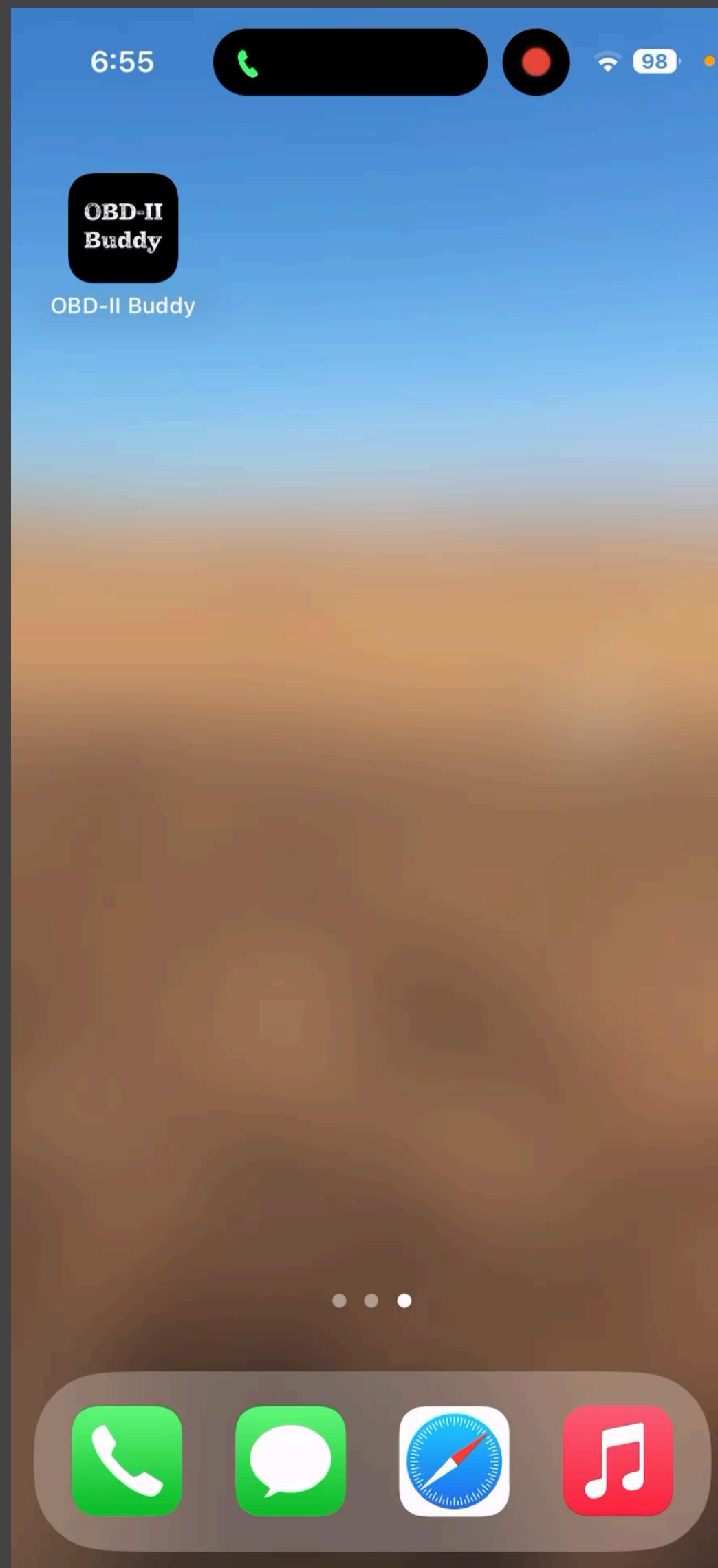
Even the most capable of these tools would only be necessary for a professional mechanic or dealership

The high-priced proprietary diagnostic
and monitoring tools reveal the need
for a cost-effective alternative for
today's consumer

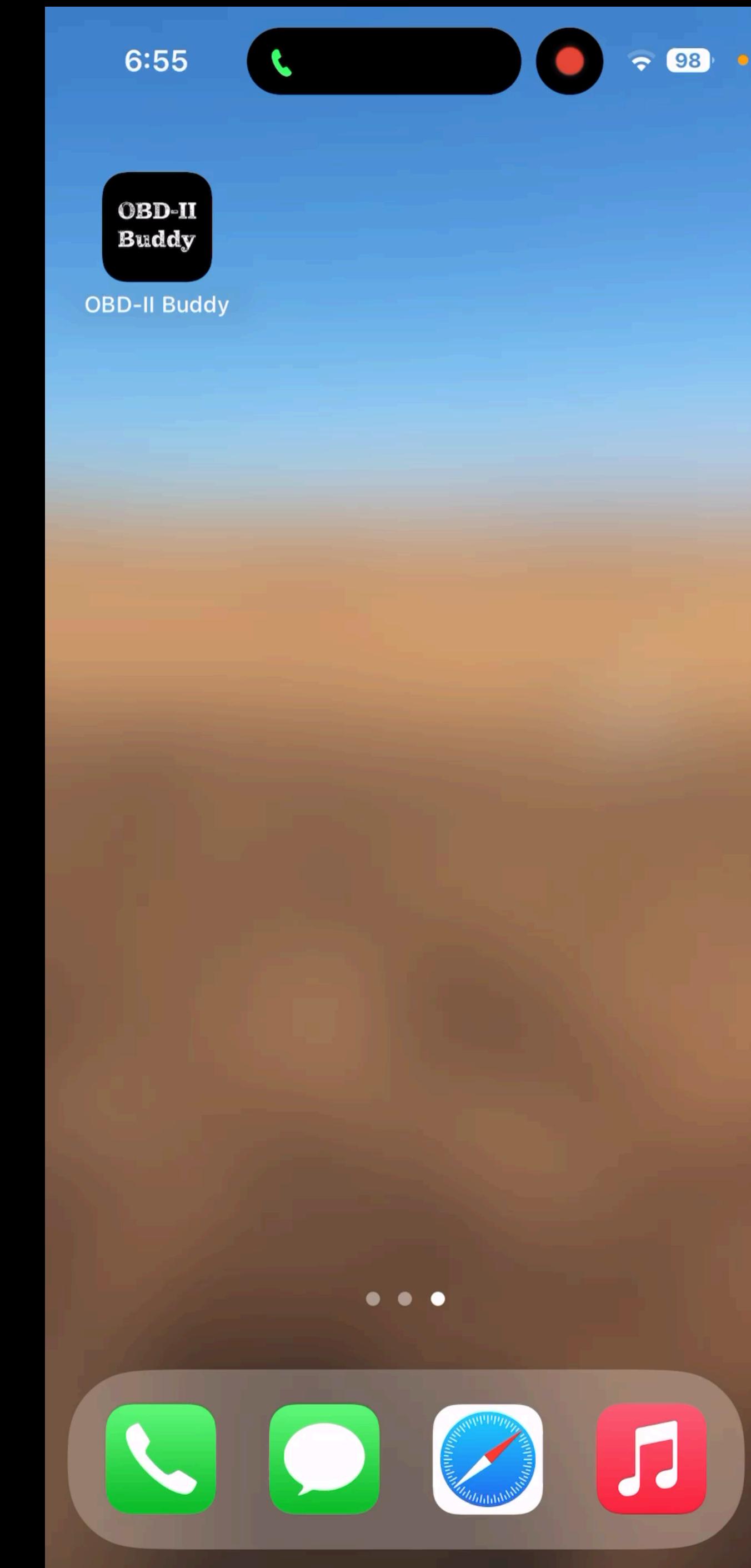
OBD-II

Buddy

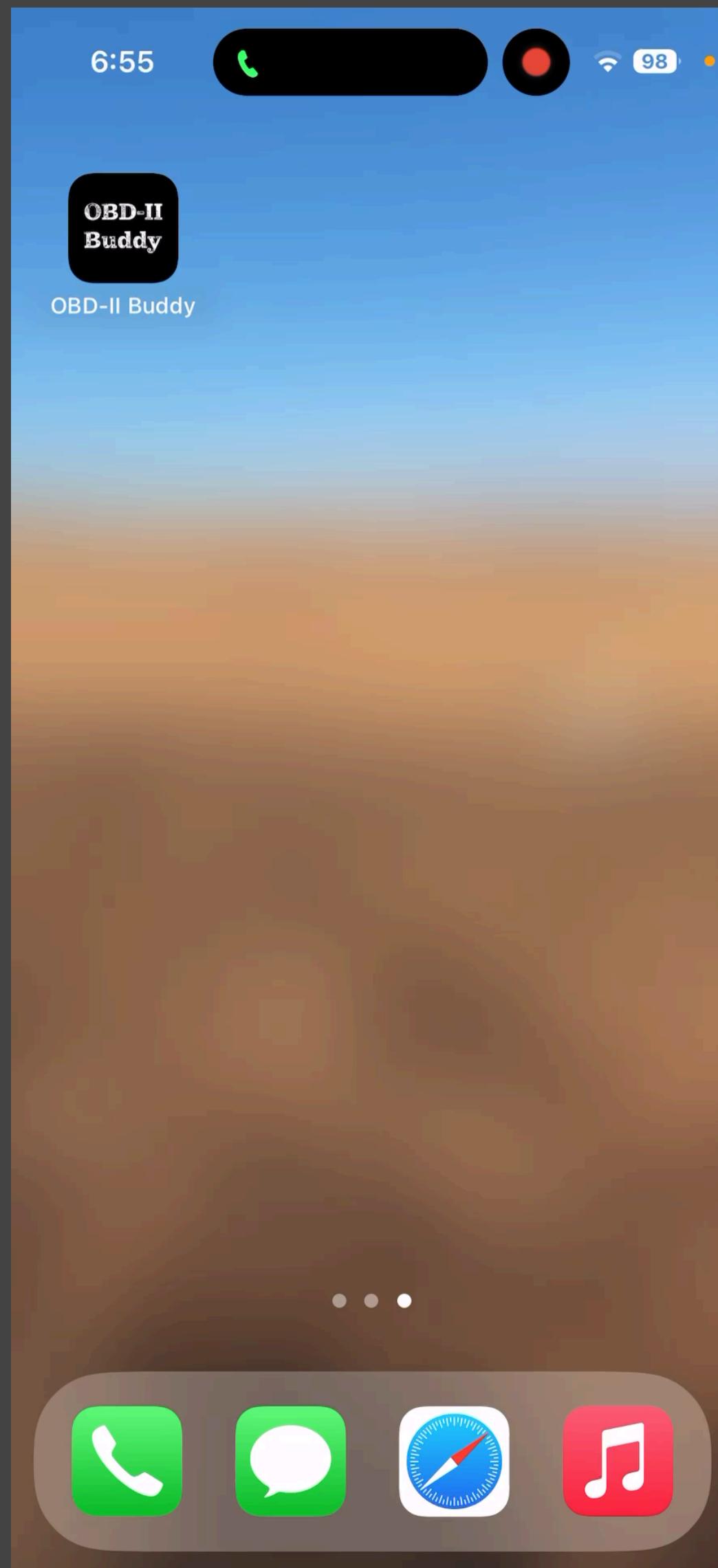
OBD-II Buddy



iPhone (Light Mode)



OBD-II Buddy



iPad (Dark Mode)

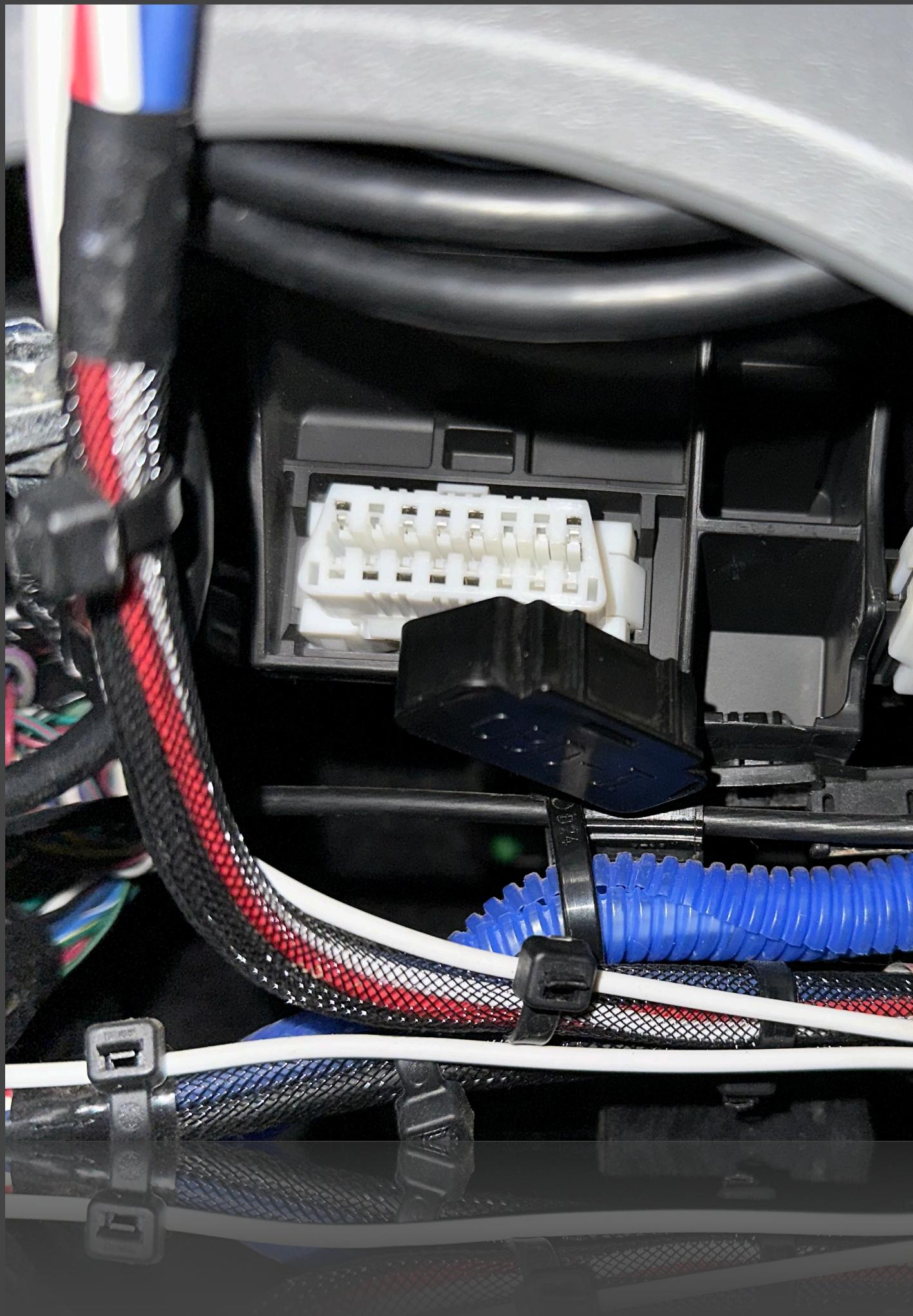


OBD-II Buddy Implementation

- Connect Bluetooth BLE device to OBD-II port

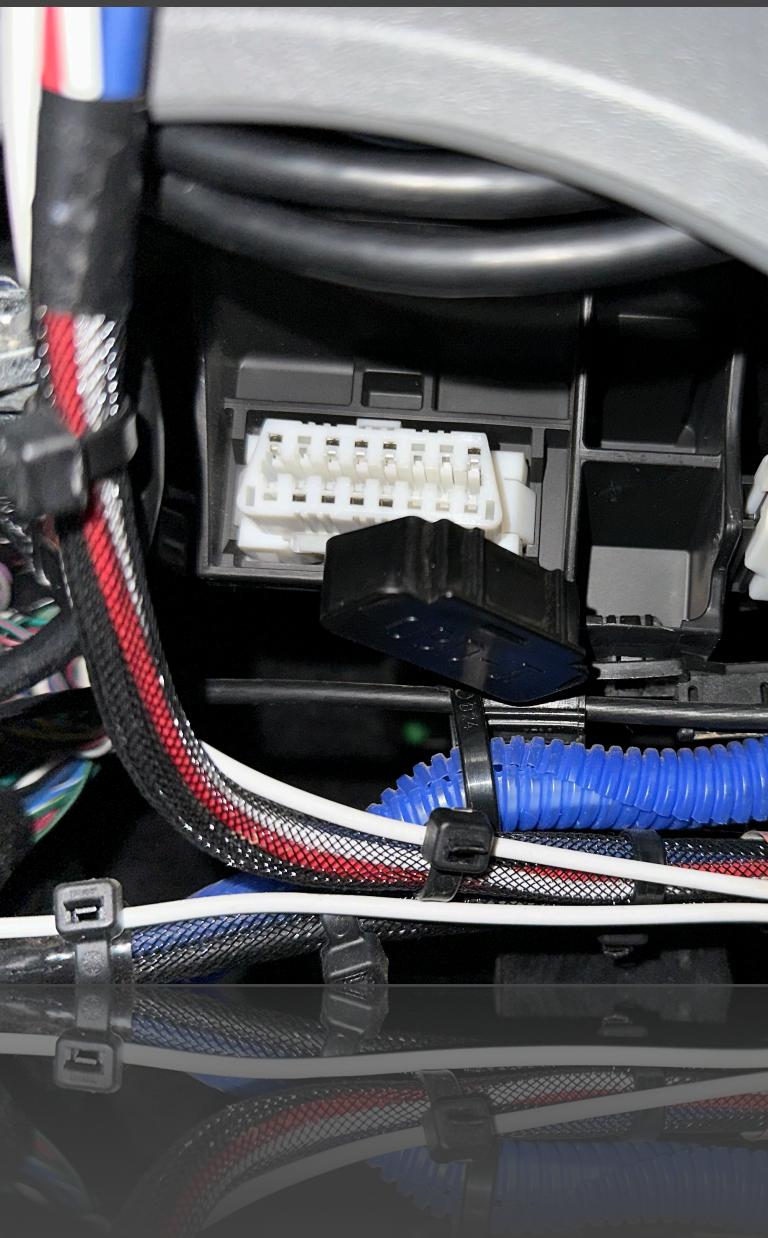
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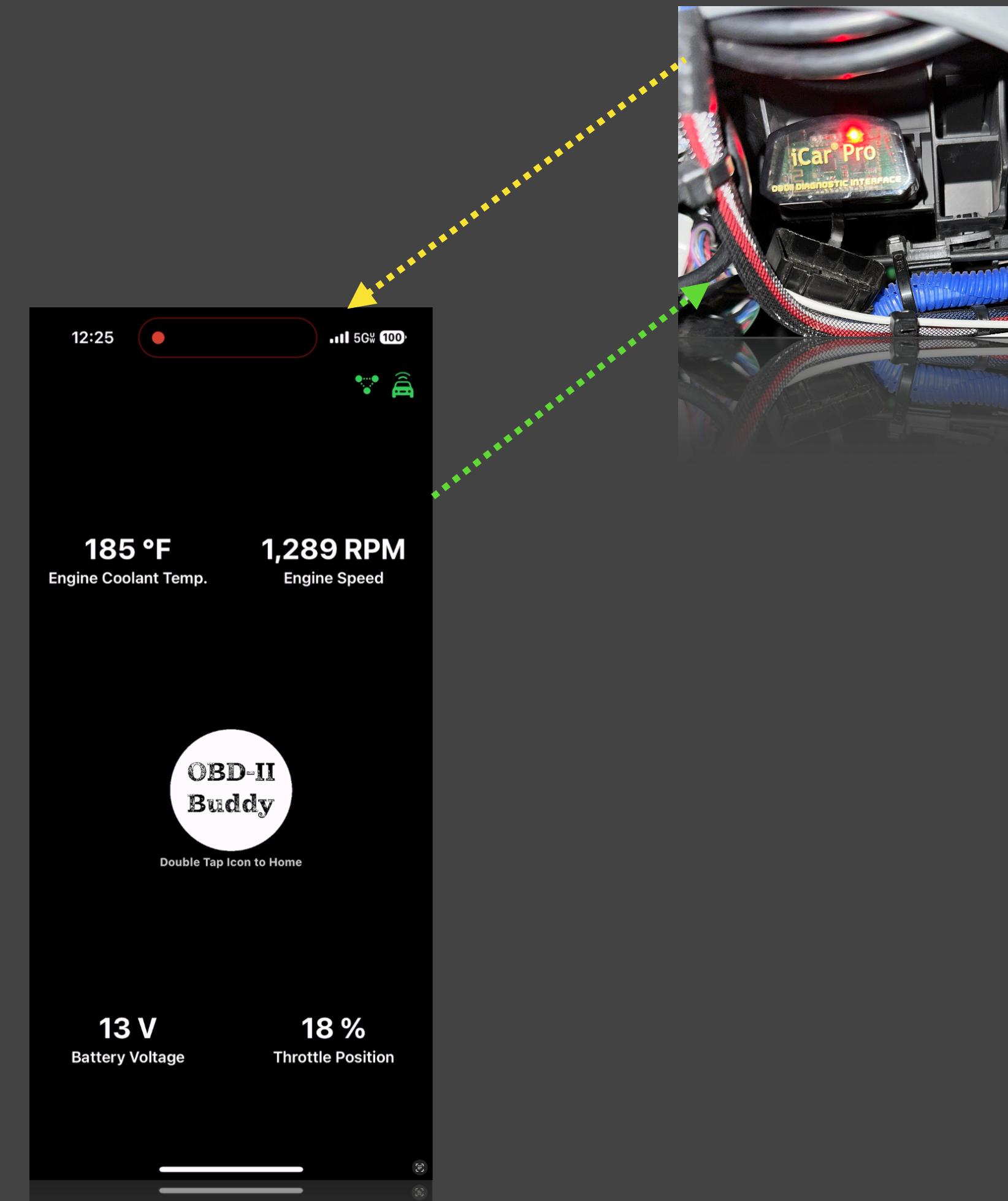
Connect to BLE device in OBD-II Buddy

This is achieved using Apple's Core Bluetooth framework:

- Establish CentralManager
- Scan for Bluetooth Peripherals nearby
- CentralManager detects Peripherals during scan
- CBPeripheralDelegate determines services offered
- CBPeripheral shows characteristics for services
- When characteristic is selected, communication is passed through the characteristic(s)

OBD-II Buddy Implementation

- Connect Bluetooth BLE device to OBD-II port
- Connect to BLE device in OBD-II Buddy



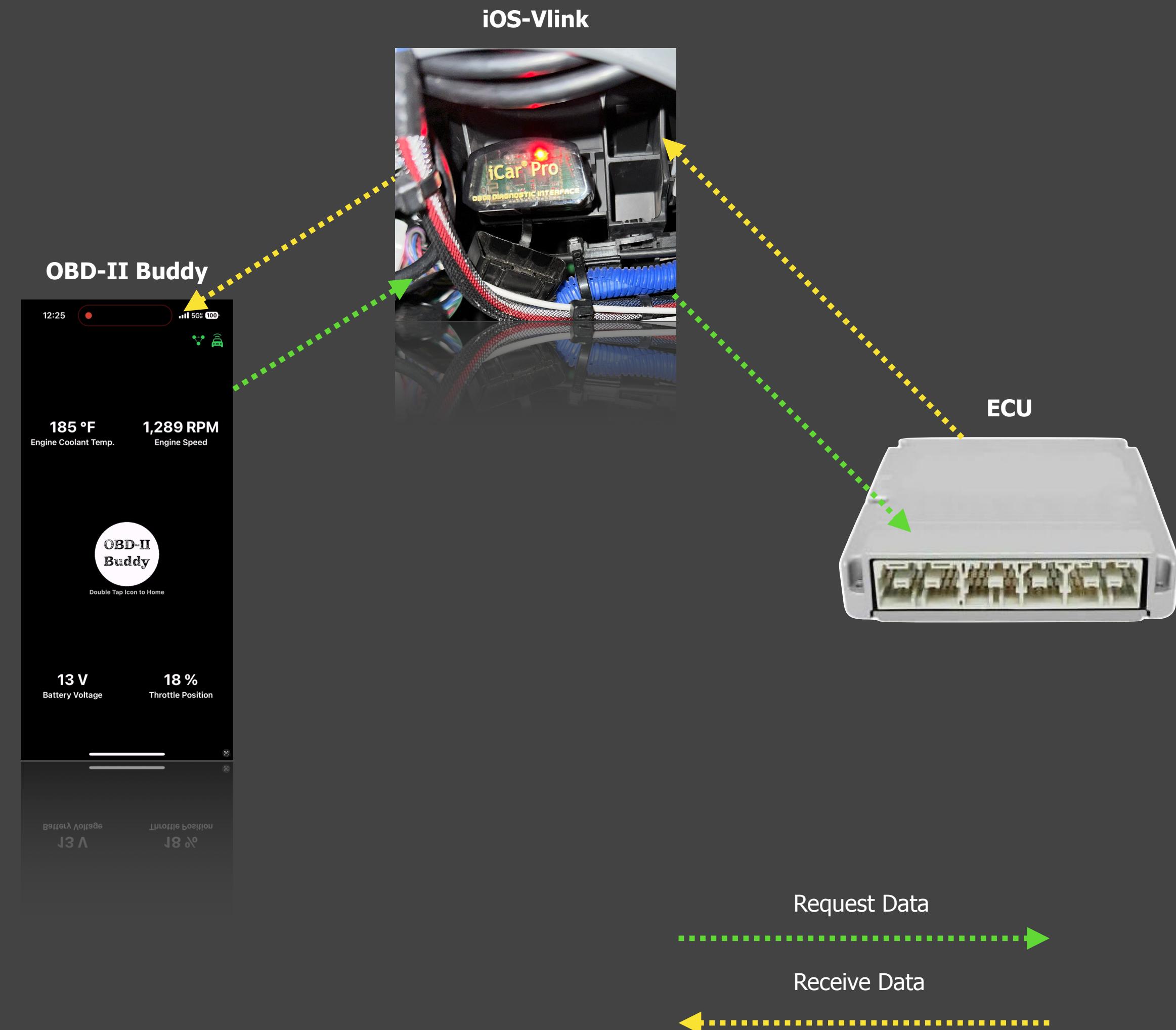
Request and receive data in OBD-II Buddy

This is achieved using the Bluetooth BLE device:

- ELM327 microcontroller inside
 - Auto detect OBD-II protocol by pin layout
 - Customizable settings with AT commands
- BLE device receives encoded hex request from OBD-II Buddy
- Passes data to ECU through OBD-II port on CAN Bus
- ECU receives request from BLE device
- ECU passes response data back to BLE device
- BLE device passes ECU hex code response back to OBD-II Buddy

OBD-II Buddy Implementation

- Connect Bluetooth BLE device to OBD-II port
- Connect to BLE device in OBD-II Buddy
- Request and receive data from the ECU through the vehicle's CAN Bus



Questions?

Resources

<https://www.snapon.com/EN/US/Diagnostics/Products/SOLUS-Legend>

<https://www.fixd.com/>

<https://www.mycarly.com/>

https://techinfo.toyota.com/techInfoPortal/appmanager/t3/ti?_pageLabel=ti_vehicle_reprog&_nfpb=true

<https://www.toyotapartsdeal.com/oem/toyota~computer~engine~control~89661-04690.html>