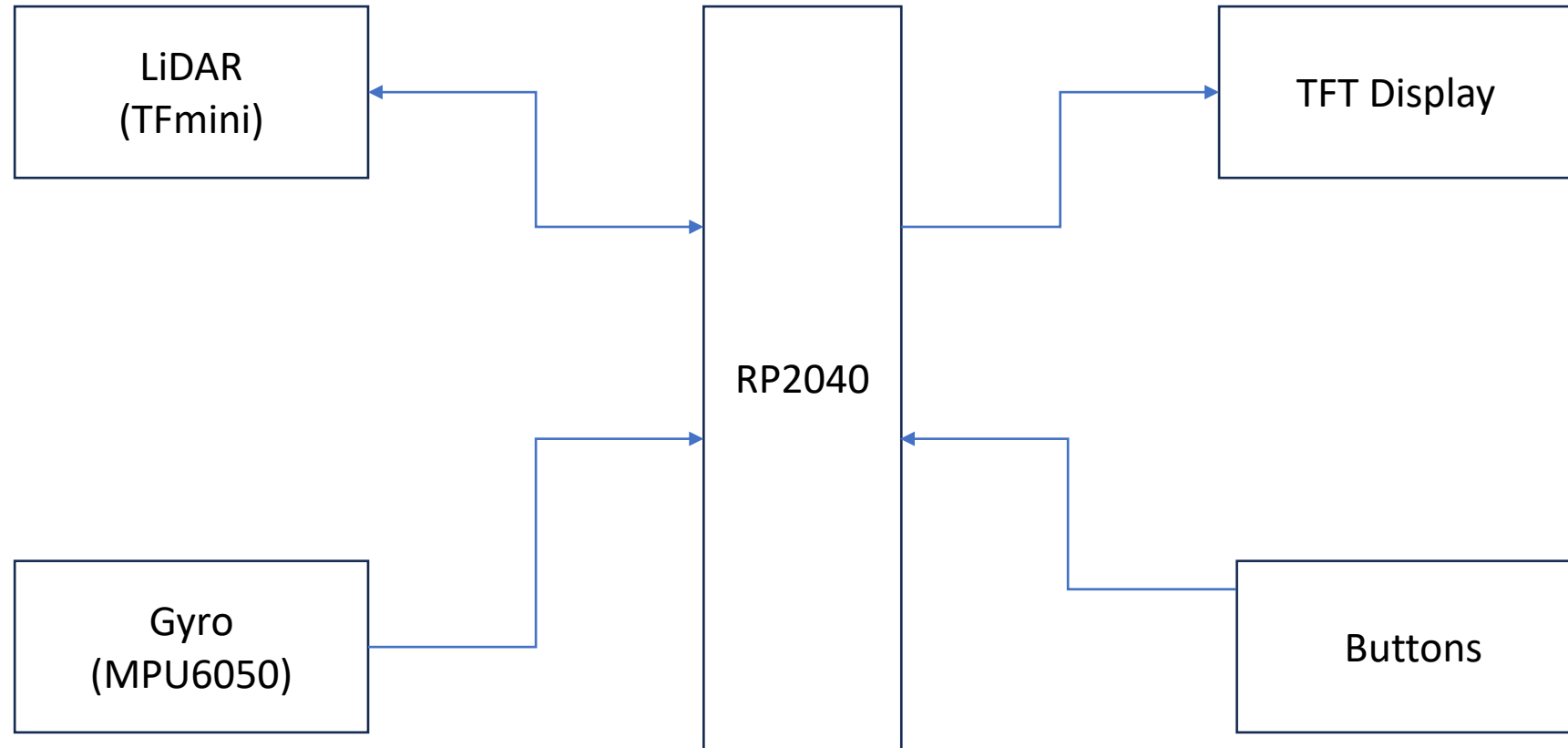# SmartSpace Mapper

Presented by :
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Block Diagram:

Software modules:

❑ **Input Module** : Keypad & Sensor interfacing module (Input handler)

❑ **Data processing Module** : Data conversions and sensor fusion library

❑ **Output Module** : Display configuration and simple UI design

❑ **Communication Module** : Includes all the communication protocols for each individual sensor requirement (SPI, UART, I2C….)

❑ **Debug and Error handling Module** : Unit test cases and logging based functions

Key milestones:

- Schematic design   10/22/2023
- PCB design   10/25/2023
- Assembling   -
- Interfacing of all the sensors   11/05/2023
- Start Software development   11/14/2023
- Testing and debugging   11/21/2023
- Address feedbacks commands   11/28/2023
- Optimization   12/05/2023
- Documentation   12/08/2023

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Project deliverables:

Fully Functional SmartSpace Mapper Device:
- Complete integration of RP2040, gyro, LIDAR, display, and keypad.
- Accurate sensor readings, sensor fusion (if applicable), and proper user input handling.
- Intuitive user interface with menu system and clear data presentation.

Documentation:
- Detailed documentation outlining the project scope, architecture, hardware connections, and software components.
- Well-commented codebase to aid understanding and future modifications.

Fallback plan:
- Interface microcontroller only with LiDAR, Display and keypad. Leaving behind gyro sensor if time doesn't permit.
- Interface microcontroller only LiDAR and Bluetooth, substituting display and keyboard with smartphone UI.

Thank you!