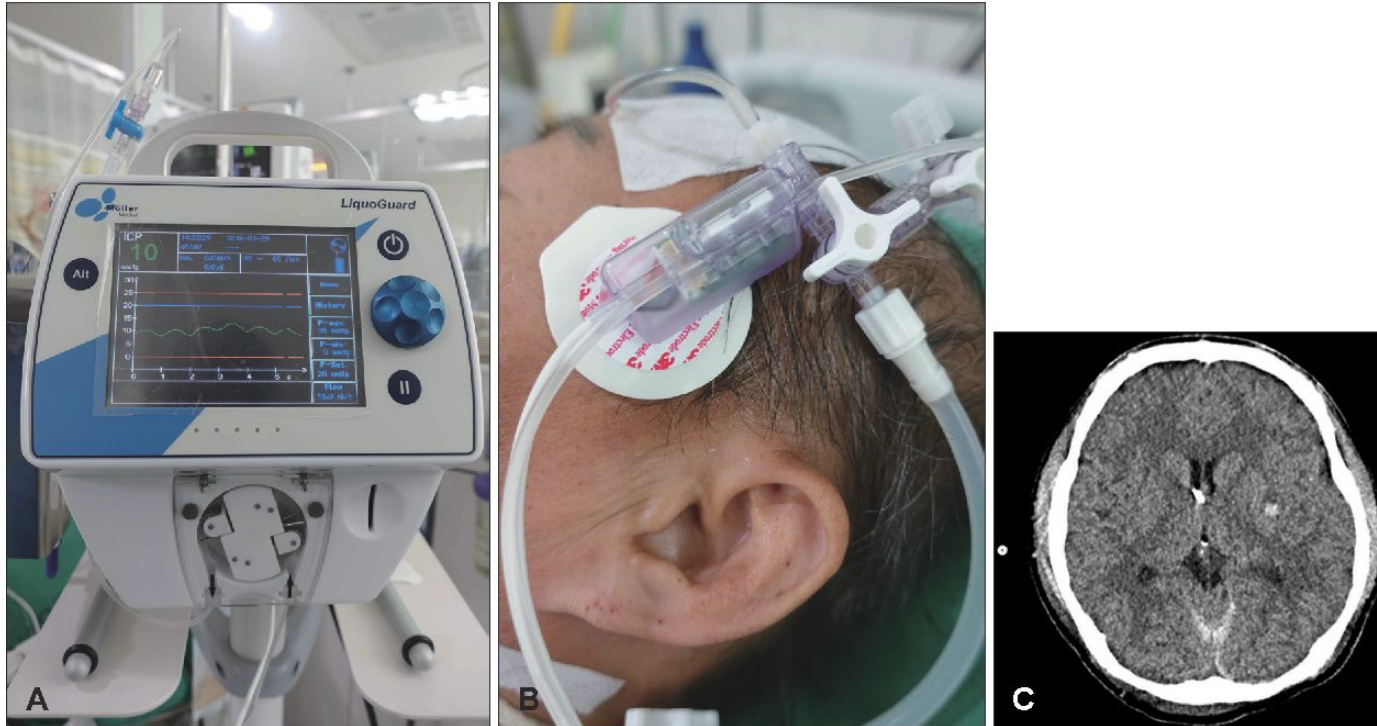


# Development of a Wearable Intracranial Pressure Monitoring Device

Students: Ese Bowry, Marissa Hsu  
Mentors: Joshua Liu, Dr. Chad Gordon, Dr. Mehran Armand

# Intracranial Pressure Monitoring

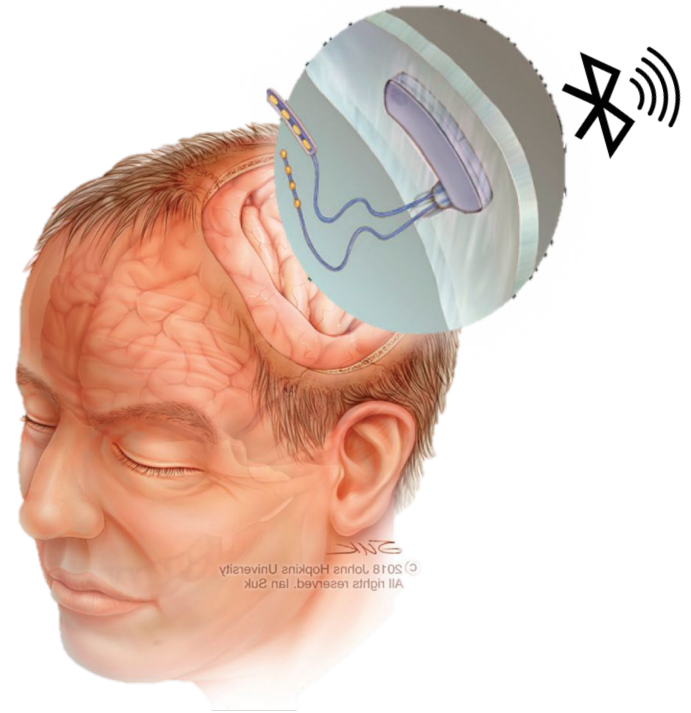


Intracranial pressure (ICP) monitoring system and connected external ventricular drainage catheter

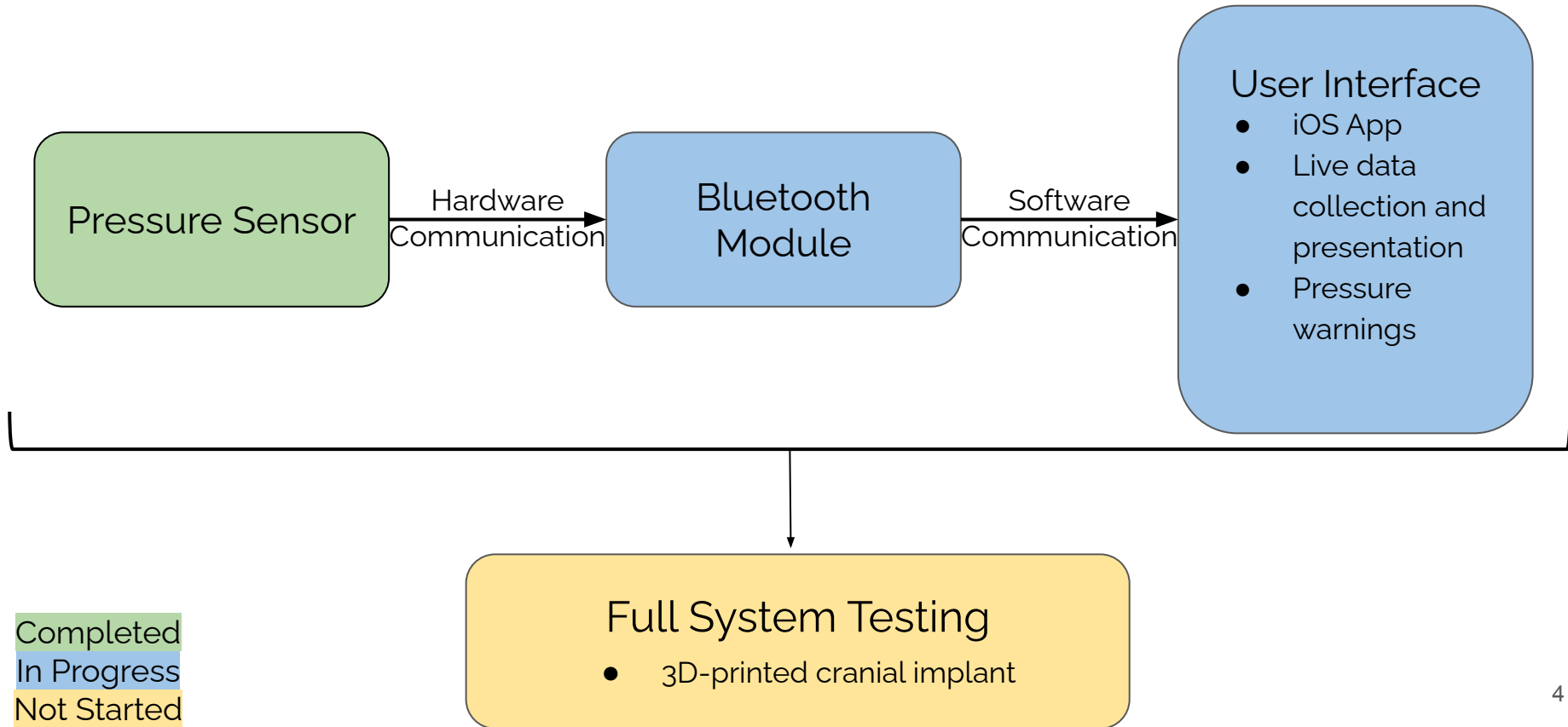
# Wireless ICP Monitoring Device

Goals:

1. Prototyping a **wearable monitoring device** that can be embedded in a cranial implant for measuring a patient's intracranial pressure
2. Transferring the **data** to a remote PC/smartphone via Bluetooth
3. **Live-tracking** and feedback

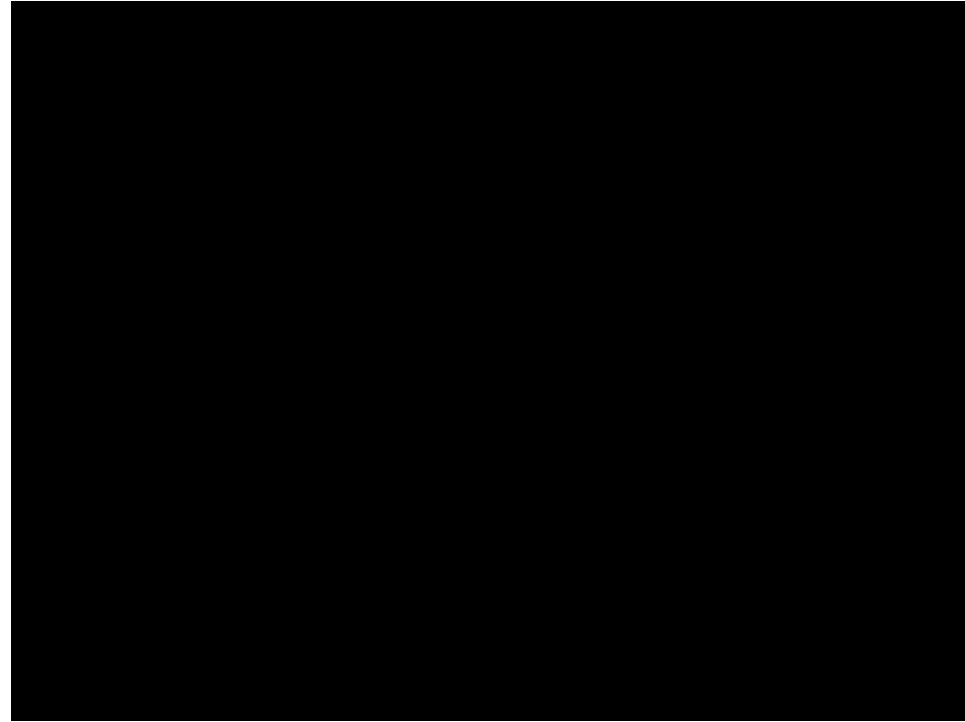
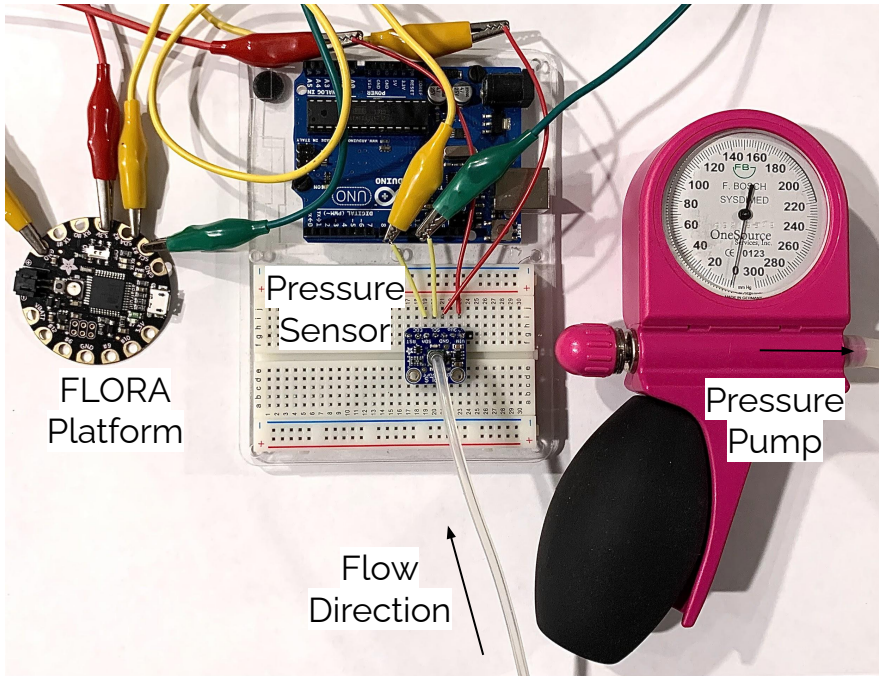


# Planned Hardware & Software Integration





# Hardware: FLORA and Pressure Sensor Compatibility



# User Interface (UI/UX Design)



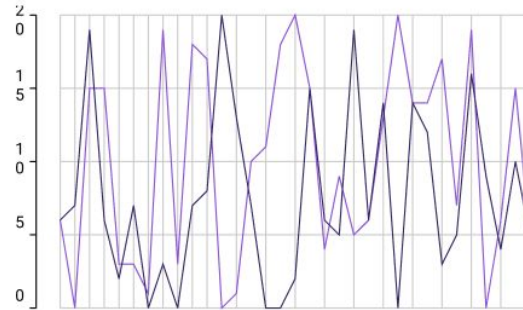
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8:04



Welcome Back!

Let's Start Monitoring Our Intracranial Pressure



# Problems

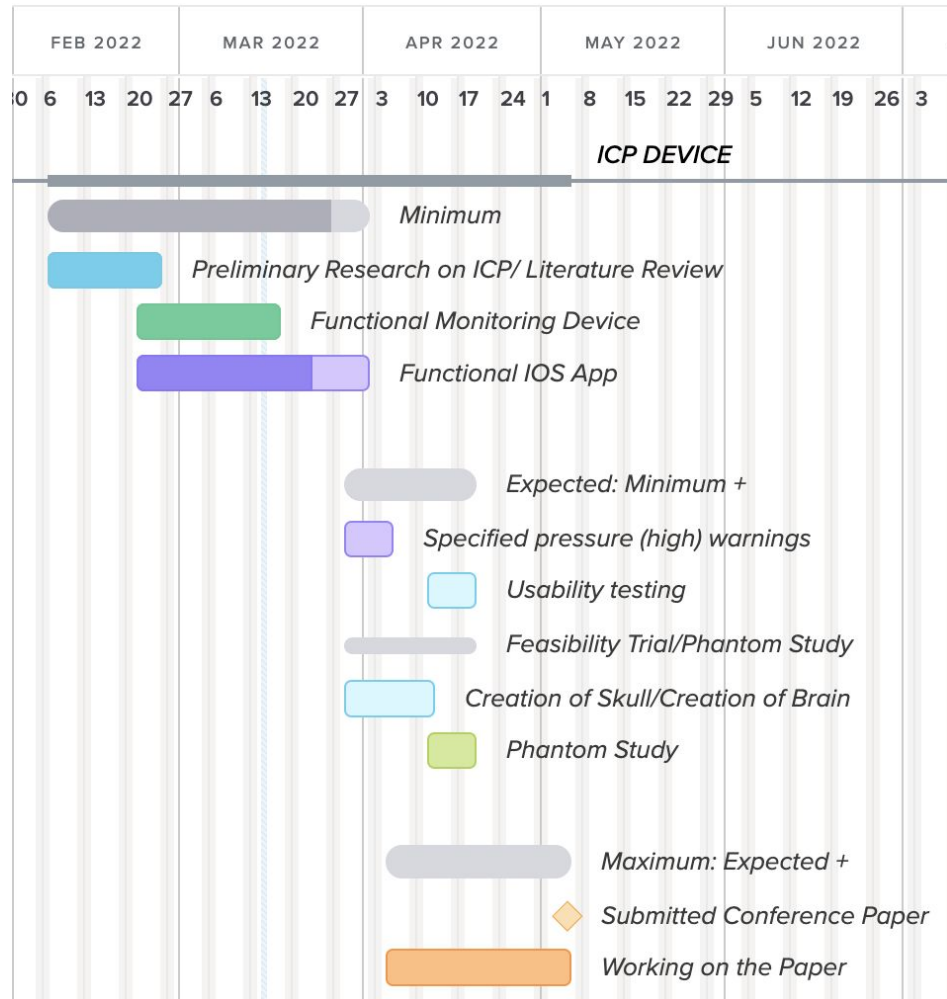
## Hardware:

1. Manual calibration of Arduino serial monitor
2. Loose connections between electronic platform, bluetooth transmitter and pressure sensor
3. Messy connections (wires)
4. Not compact

## Software:

1. Documentation for Arduino connection is for Android
2. User Friendly Interface

# Updated Timeline



# Milestones

<u>Milestone</u>	<u>Expected Date of Completion</u>	<u>Status</u>
Fully functional ICP monitoring device and iOS App	4/1/22	In progress
Creation of Fake Skull and Brain (Fabrication - 3D printing, molding, etc)	4/10/22	Not started
Feasibility Trial/Phantom study	4/17/22	Not started
Usability Testing	4/17/22	Not started

# Dependencies

<b>Dependency</b>	<b>Solution</b>	<b>Alternative</b>	<b>Expected Date</b>	<b>Status</b>	<b>Effect</b>
Obtaining Electronic Component	Purchasing FLORA Wearable Electronic Platform	Purchasing Bluefruit LE Module	2/21/2022	Completed	Unable to begin design of device
Data Transfer	Purchasing Bluetooth Transmitter	Purchasing Wifi Module	4/1/2022	Completed	Wireless Transfer
Fake Skull	3D Printing/Molding	Plastic Skull	4/12/2022	Not Started	Full Testing
Testing Environment	Fully Functional Device and App	Minimally Functional Device+App	3/17/2022	Not Started	Usability Testing and Improvements

Thank you!

Questions?