



Graduation Project 2

Color mixer and painting Machine

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Supervisor:

Dr. Manar Qamhieh

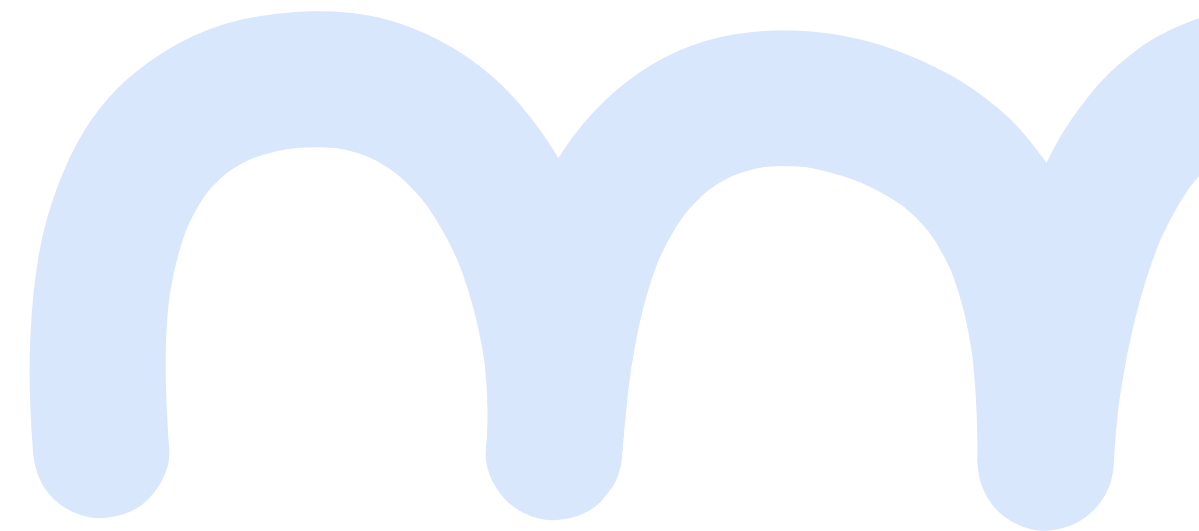
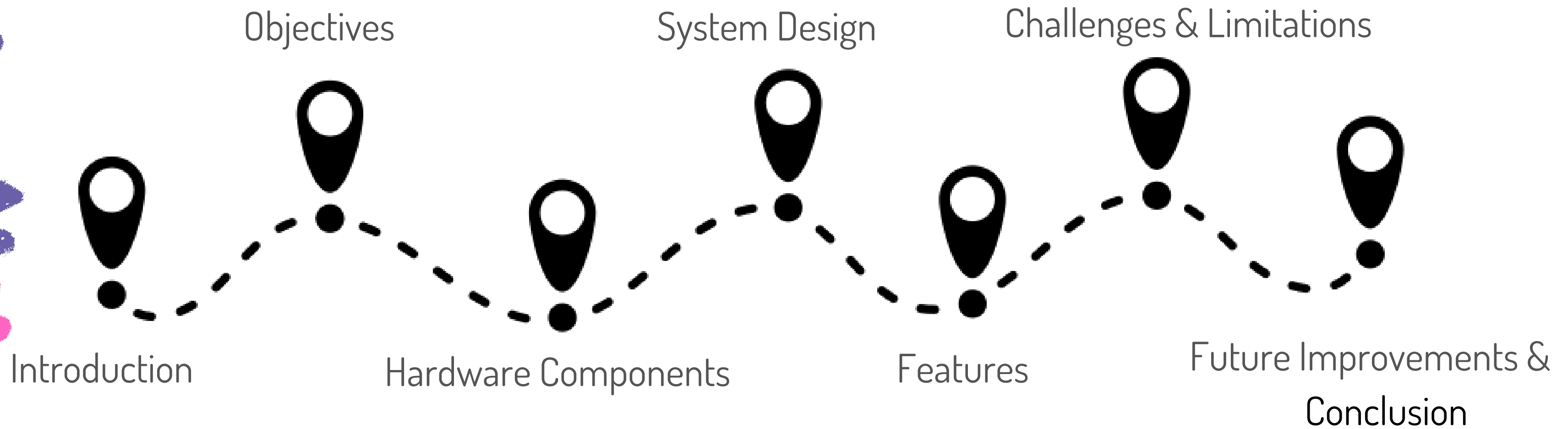


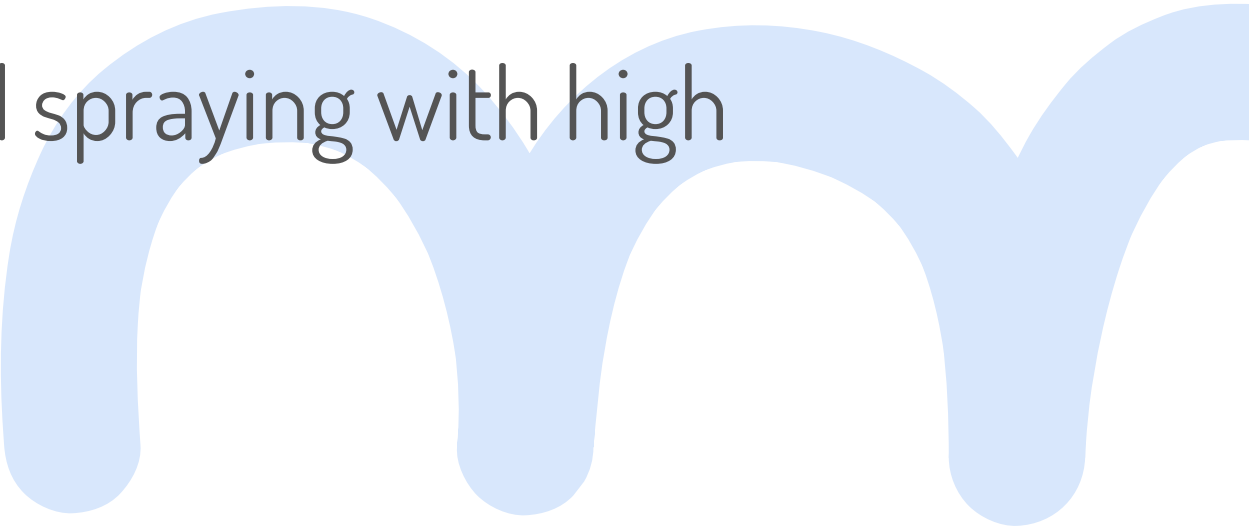



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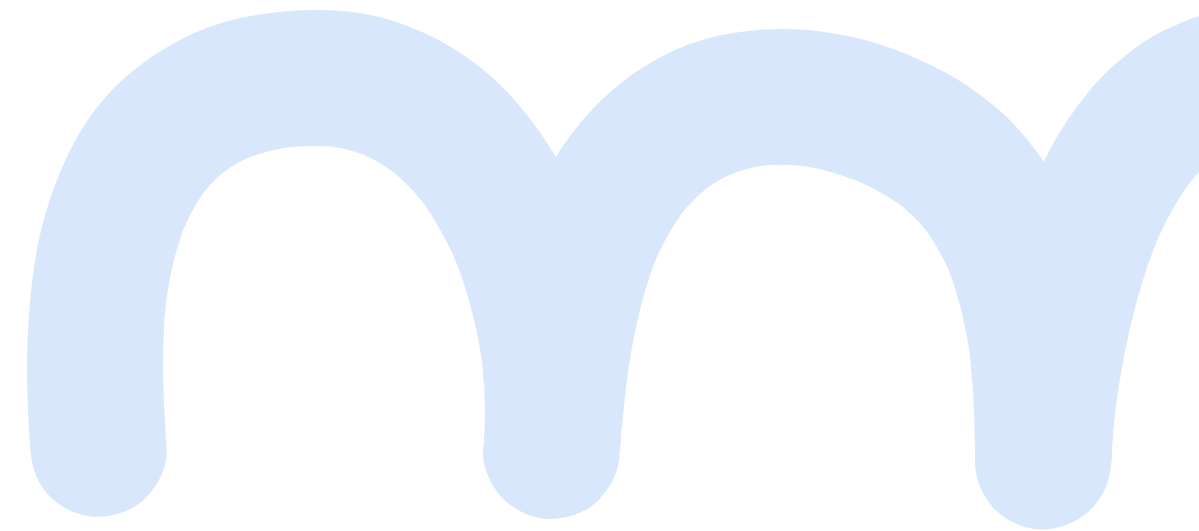
Introduction

- **Problem:** Manual color mixing is time-consuming and inconsistent.
 - **Solution:** A smart machine that mixes CMY inks based on RGB input or scanned color.
 - **Purpose:** To automate color selection, mixing, and spraying with high accuracy.
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Objectives

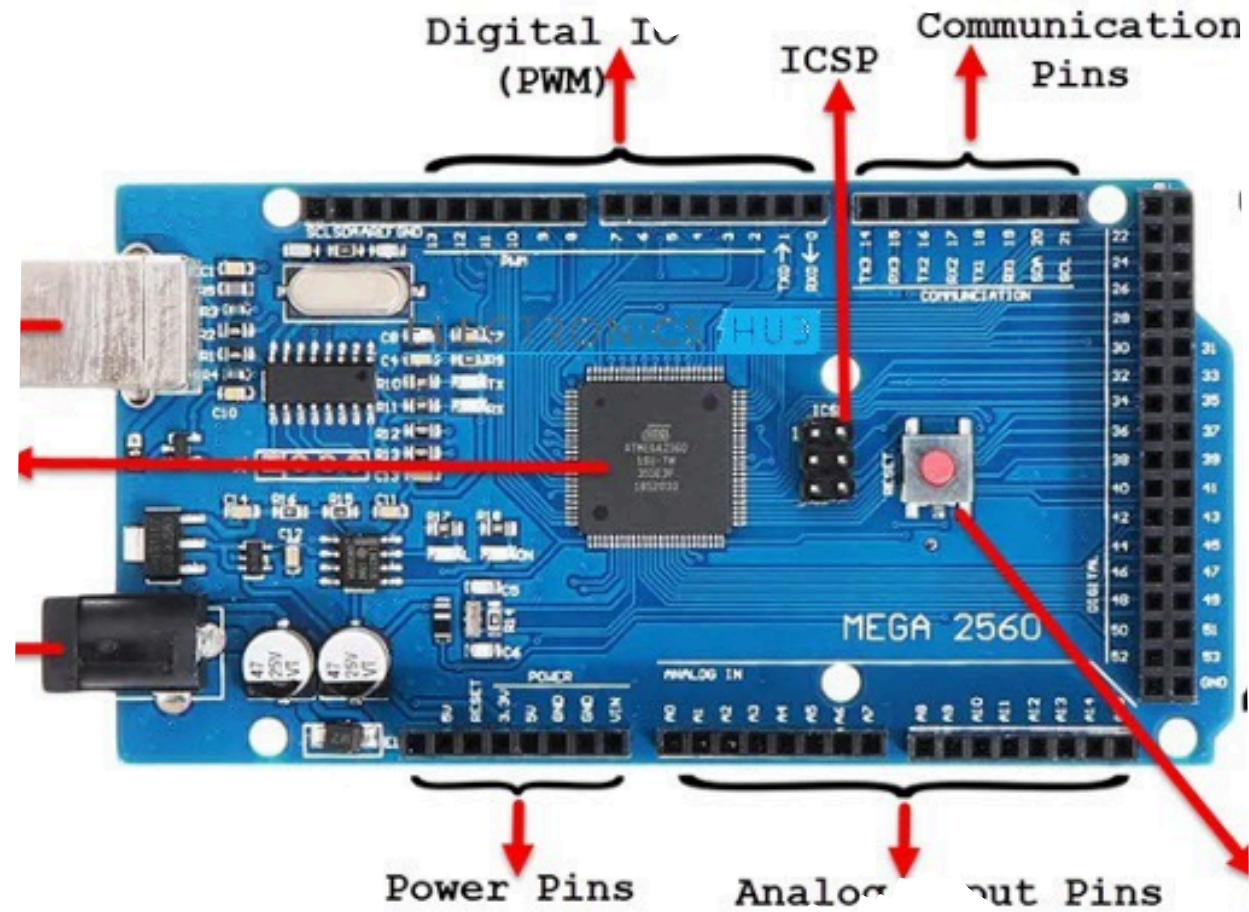
- Accept RGB input manually or via scanner.
- Convert RGB to CMY and mix accurately.
- Display selected color on an LCD.
- Spray the color on a real object.
- Enable mobile control via Bluetooth.



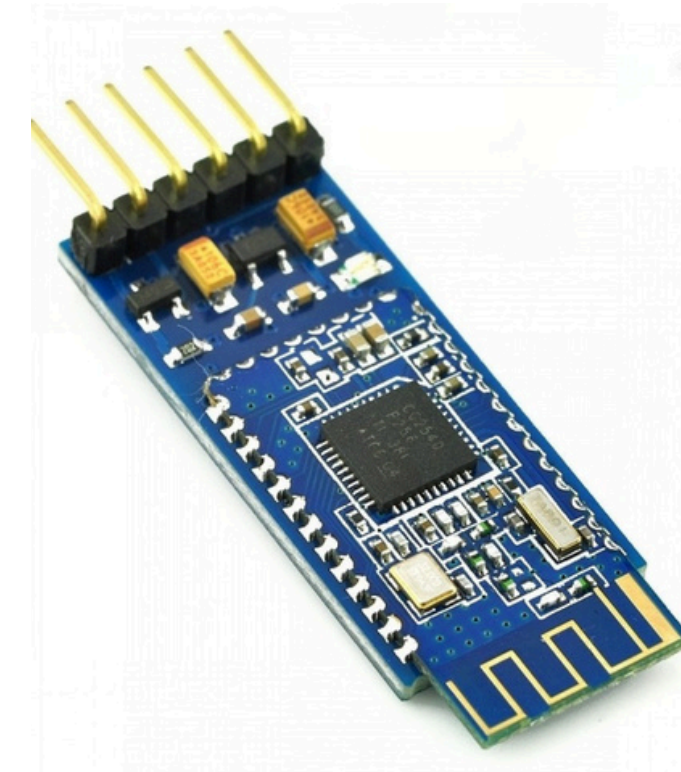
system components:



Arduino Mega Control Unit



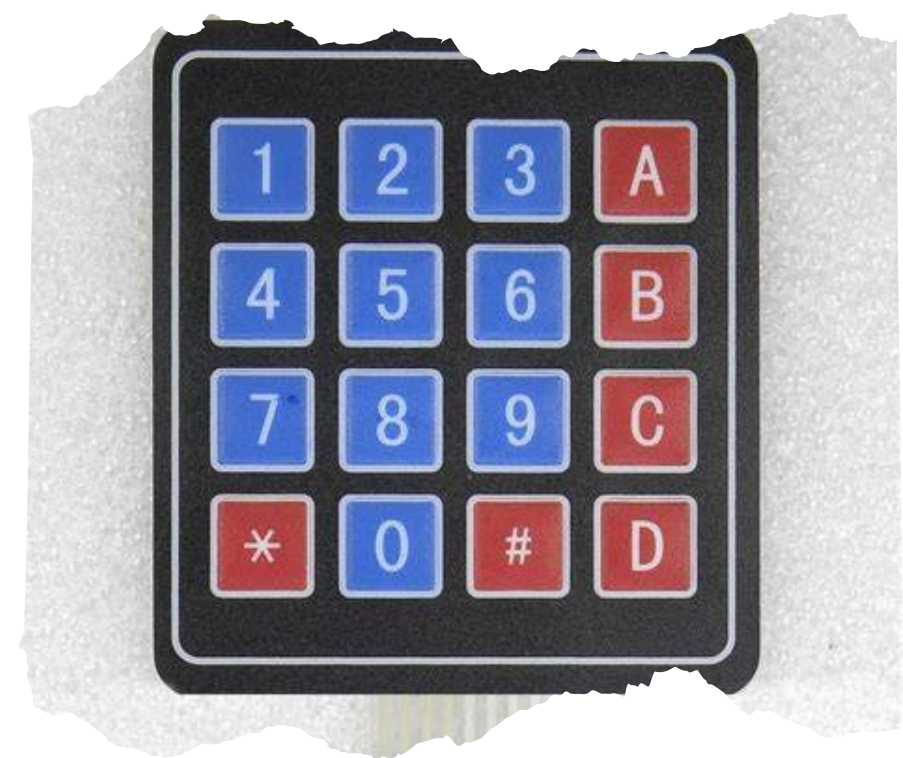
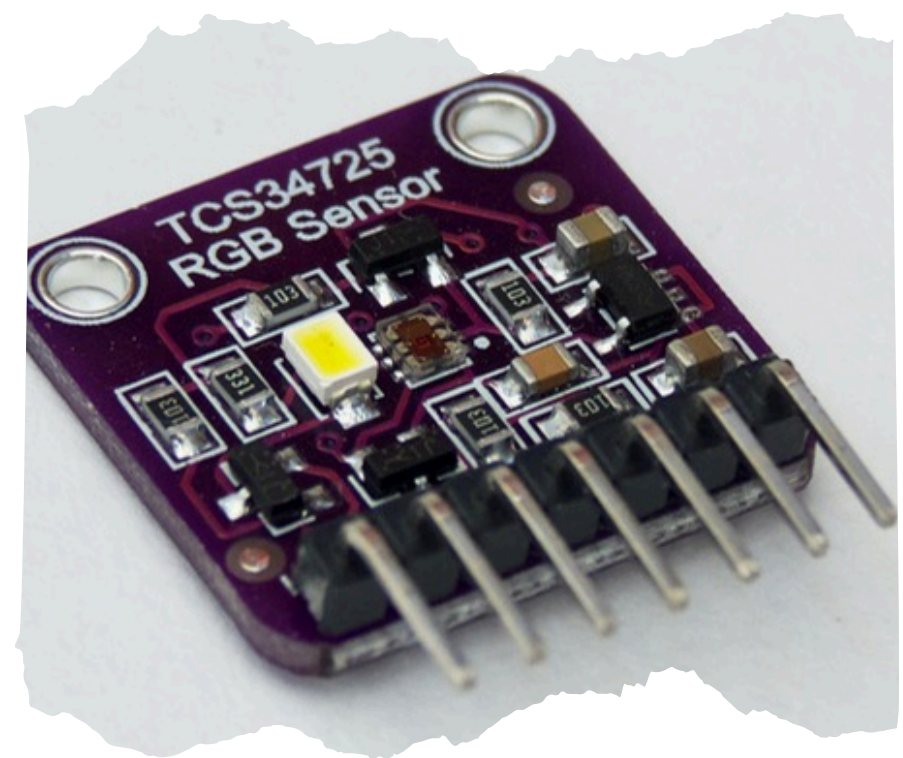
Bluetooth Module



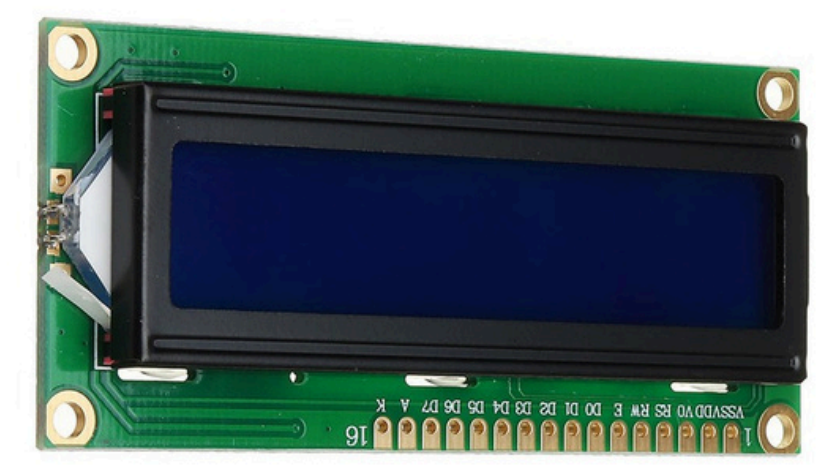
system components:



RGB Sensor or Keypad Input



LCD



system components:



Pump



Valve



Ultrasonic



system components:



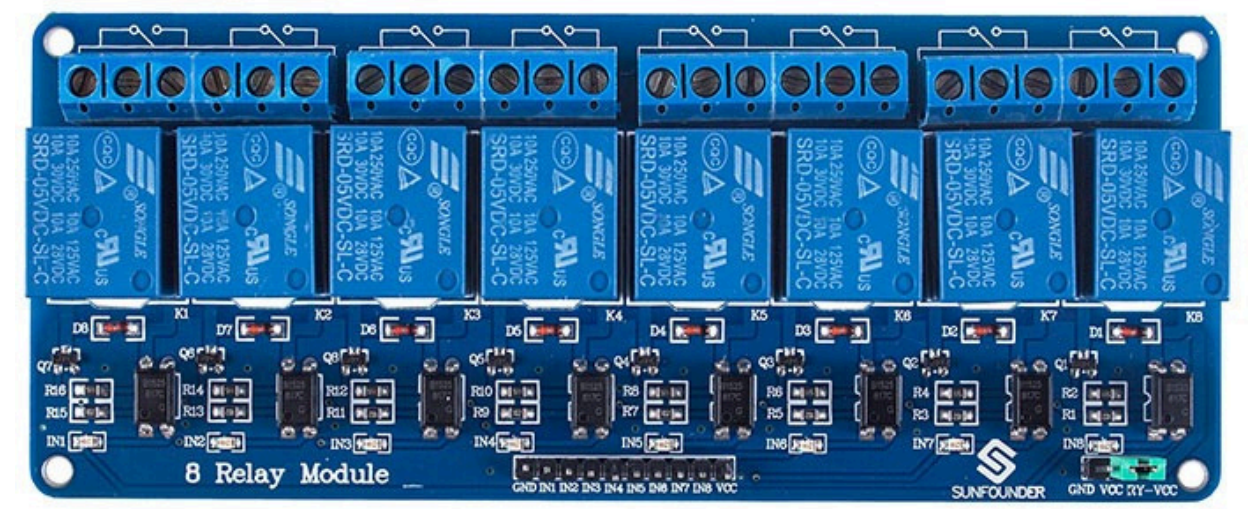
dc motor



Wiper Motor

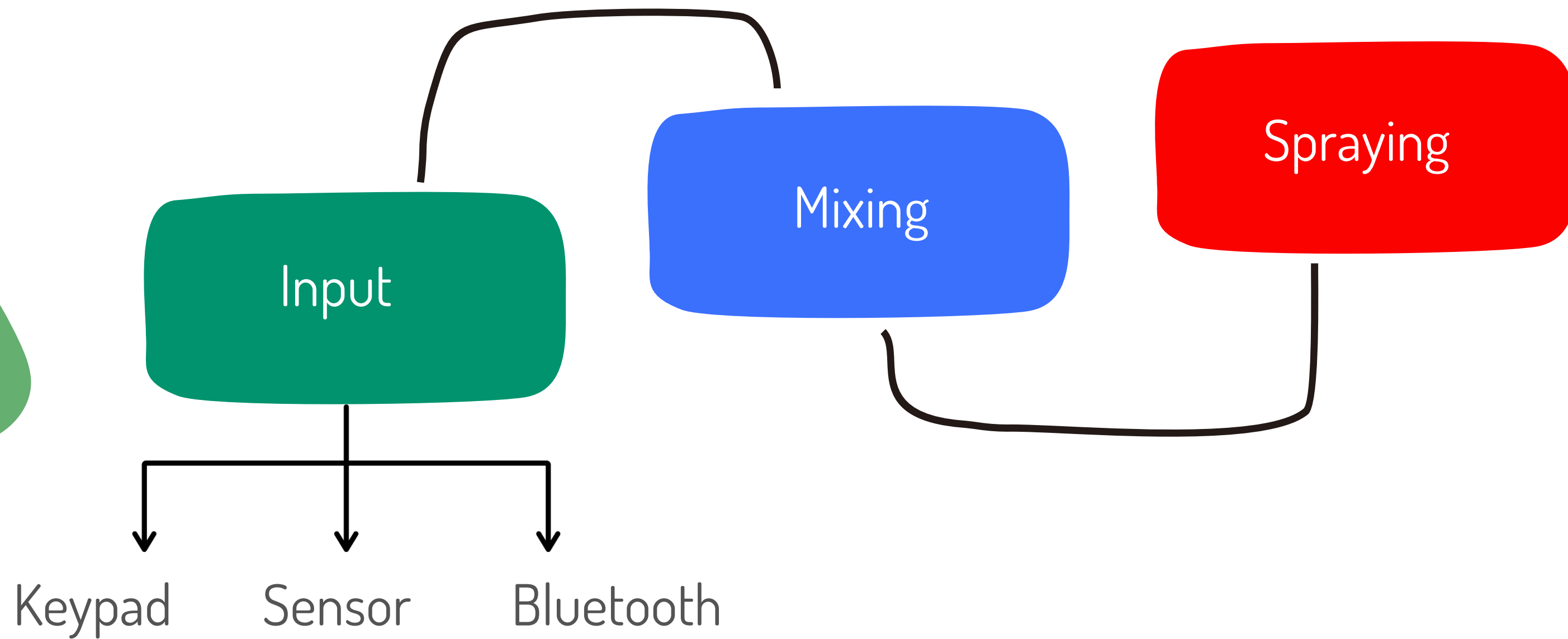


rely 8 channel



System Design

Flow Diagram



System Design

Process

1 RGB to CMY Conversion Algorithm

2 Pump control based on calculated CMY

3 Object dimension detection using Ultrasonics




4 Spraying sequence logic


5 User interface updates on LCD




Features


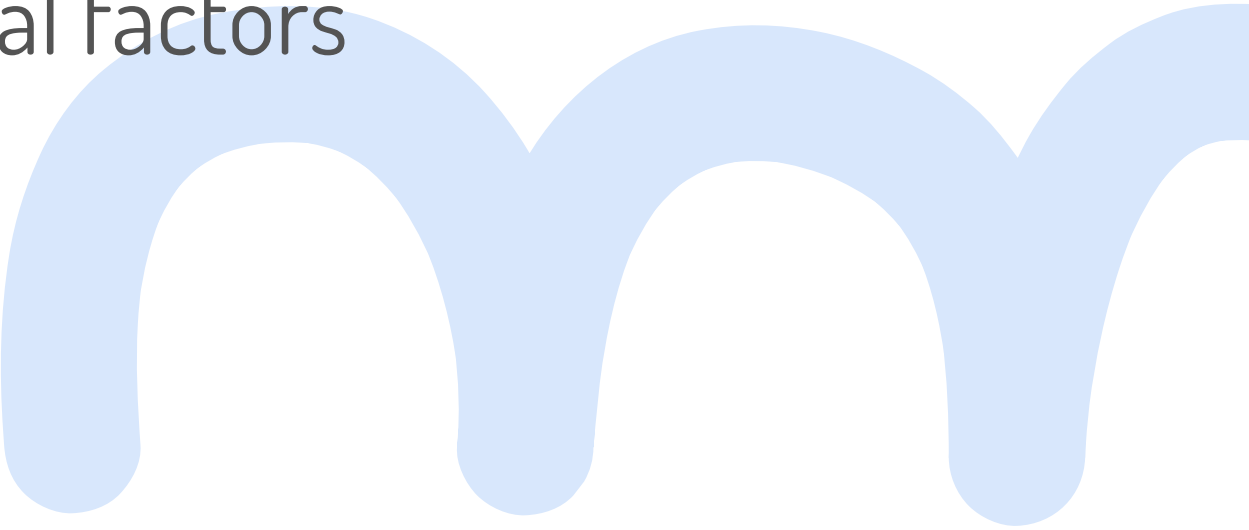



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- Multiple input options (Keypad, RGB Scanner, App)
 - Real-time LCD feedback
 - Automated and precise CMY mixing
 - Bluetooth control
 - Intelligent spraying with dimension detection
 - Low Ink Alert: Notifies user on the LCD when CMY ink levels are low and requires refill
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Challenges & Limitations



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- Calibration difficulties for color accuracy
 - Time-consuming mechanical design iterations
 - Limited CMY mixing range
 - Motor synchronization issues
 - Delay due to component sourcing and external factors
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Future Improvements

- ✦ Increase precision and range of color matching
- ✦ Enhance spray coverage algorithms
- ✦ Add additional color cartridges
- ✦ Develop full-featured Android/iOS app



Conclusion

- Successfully implemented a smart color mixing and spraying machine
- Integrated RGB input, CMY mixing, object detection, and spraying
- Gained experience in hardware-software integration
- Ready for further development and scaling



THANK YOU ALL

