

TITLE PAGE

- **Problem Statement ID – SIH25121**
- **Problem Statement Title- Student Innovation:
Swadeshi for Atmanirbhar Bharat**
- **Theme- Transportation & Logistics**
- **PS Category- Hardware**
- **Team ID-**
- **Team Name- Glitch And Switch**



IDEA TITLE

Idea : A smart traffic system prioritizing emergency vehicles using RFID, siren detection, and sensors, ensuring faster passage with minimal confusion.

SOLUTION

RFID Authorization

Verify only registered emergency vehicles.

Siren Detection

Identify emergency siren frequency.

Proximity Sensing

Confirm vehicle presence and distance.

Blue Emergency Light

Distinct signal to avoid confusion.

State Machine Control

Smooth transition between normal and emergency cycles.

Fail-Safe Mode

Auto-recovery to normal in case of sensor failure.

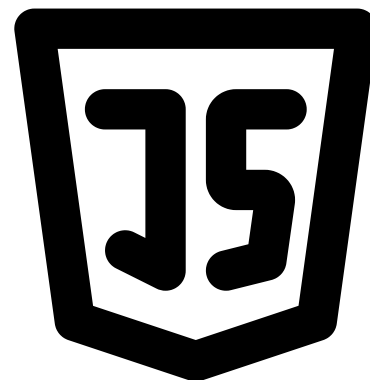
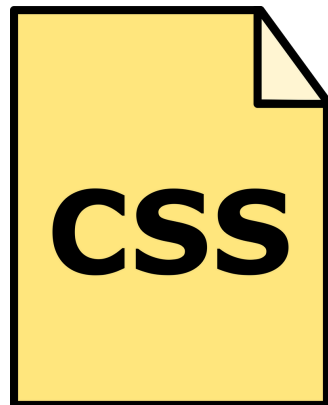
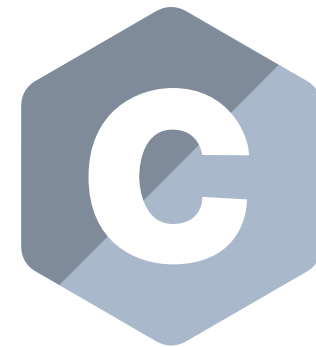
Technology Stack

ESP32

RC522 RFID
MODULE

WOKWi

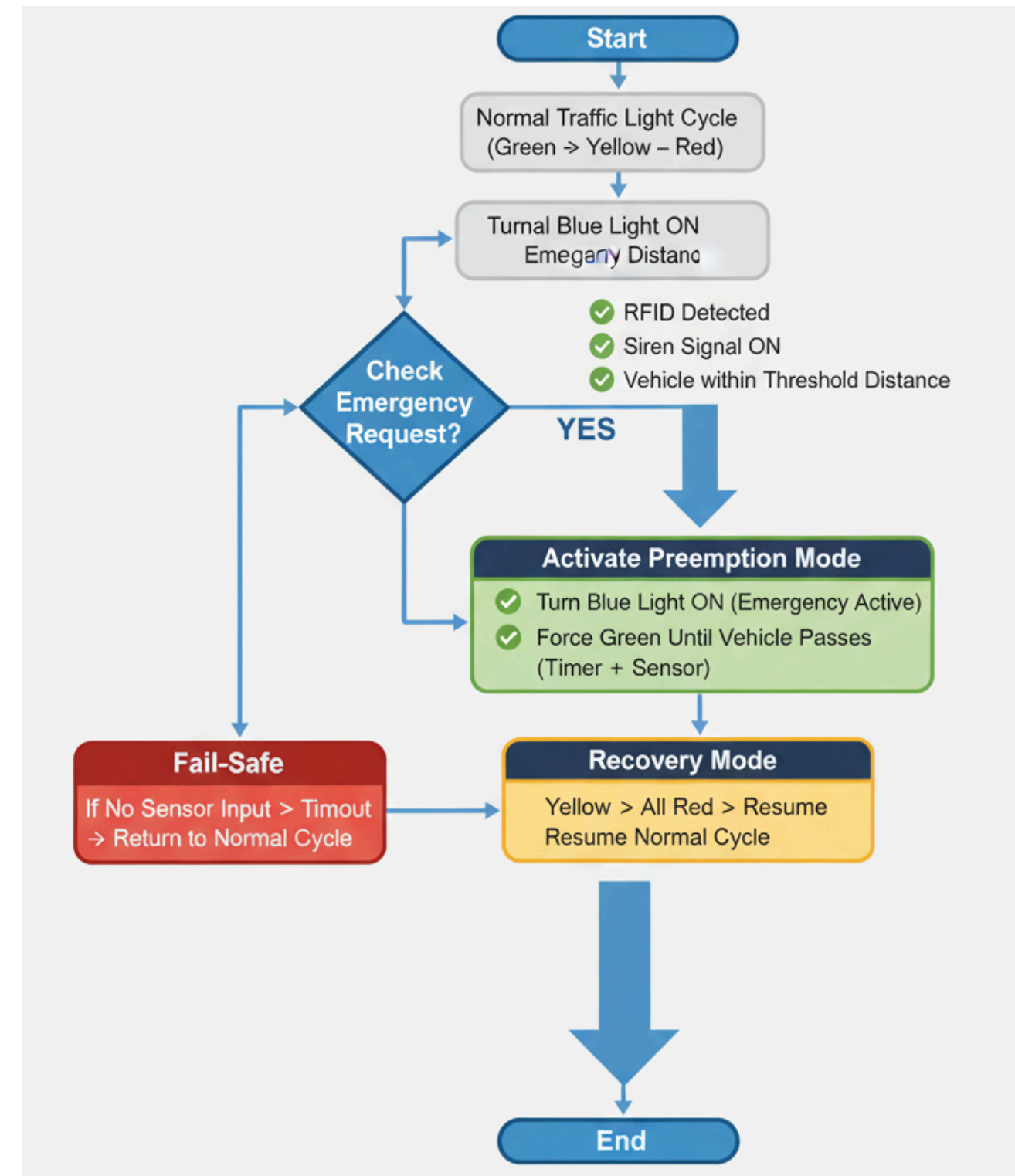
Ultrasonic Sensor
(HC-SR04)



LED indicators



Flow Chart



Analysis of the Feasibility of the Idea

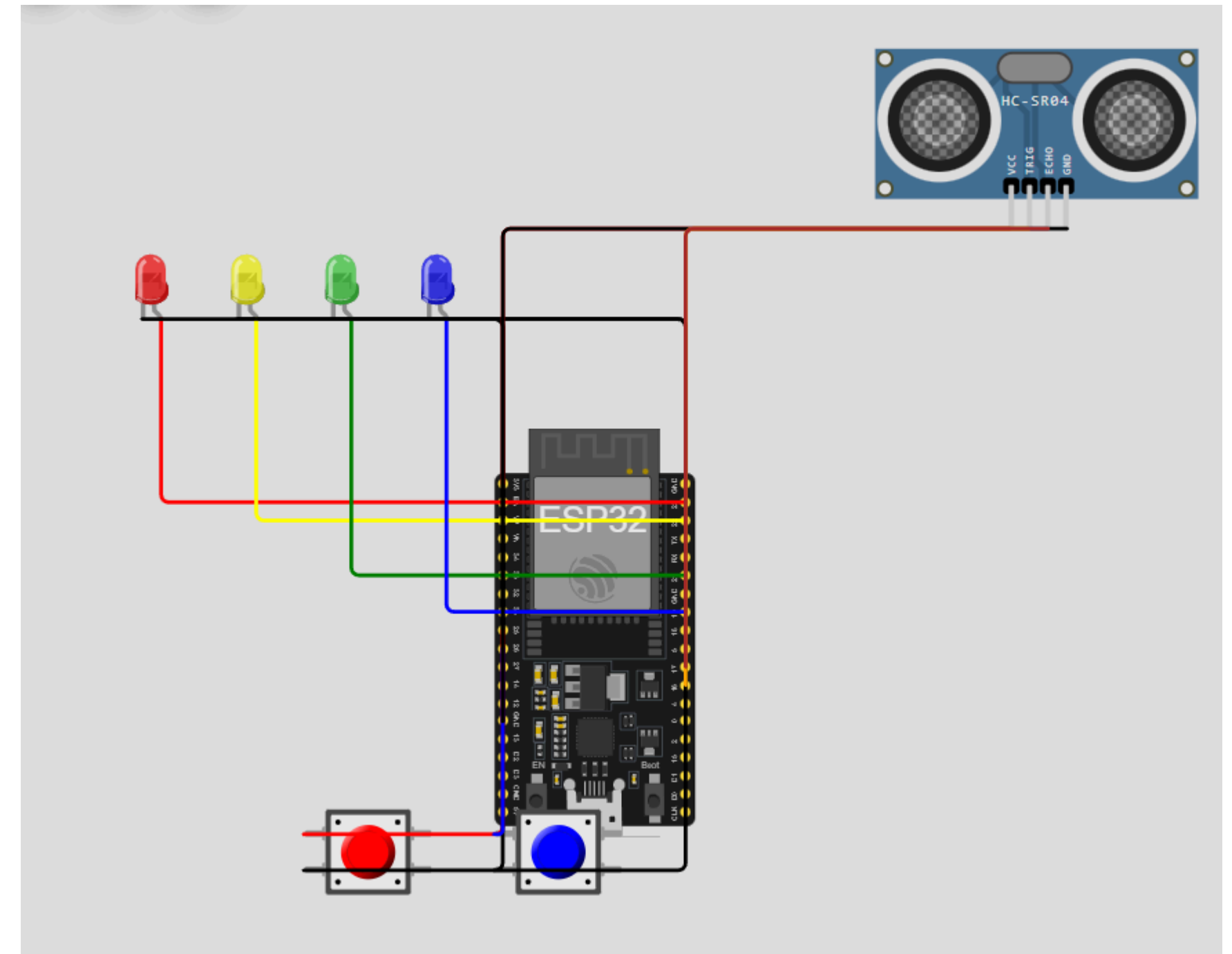
- Technical feasibility
- Affordable scalability
- Seamless integration

Potential Challenges and Risks

- Siren detection issues
- Hardware failures
- Synchronization conflicts
- Adoption barriers

Strategies for Overcoming These Challenges

- Smart detection
- Fail-safe mode
- Priority logic
- Pilot integration



1. Use Cases

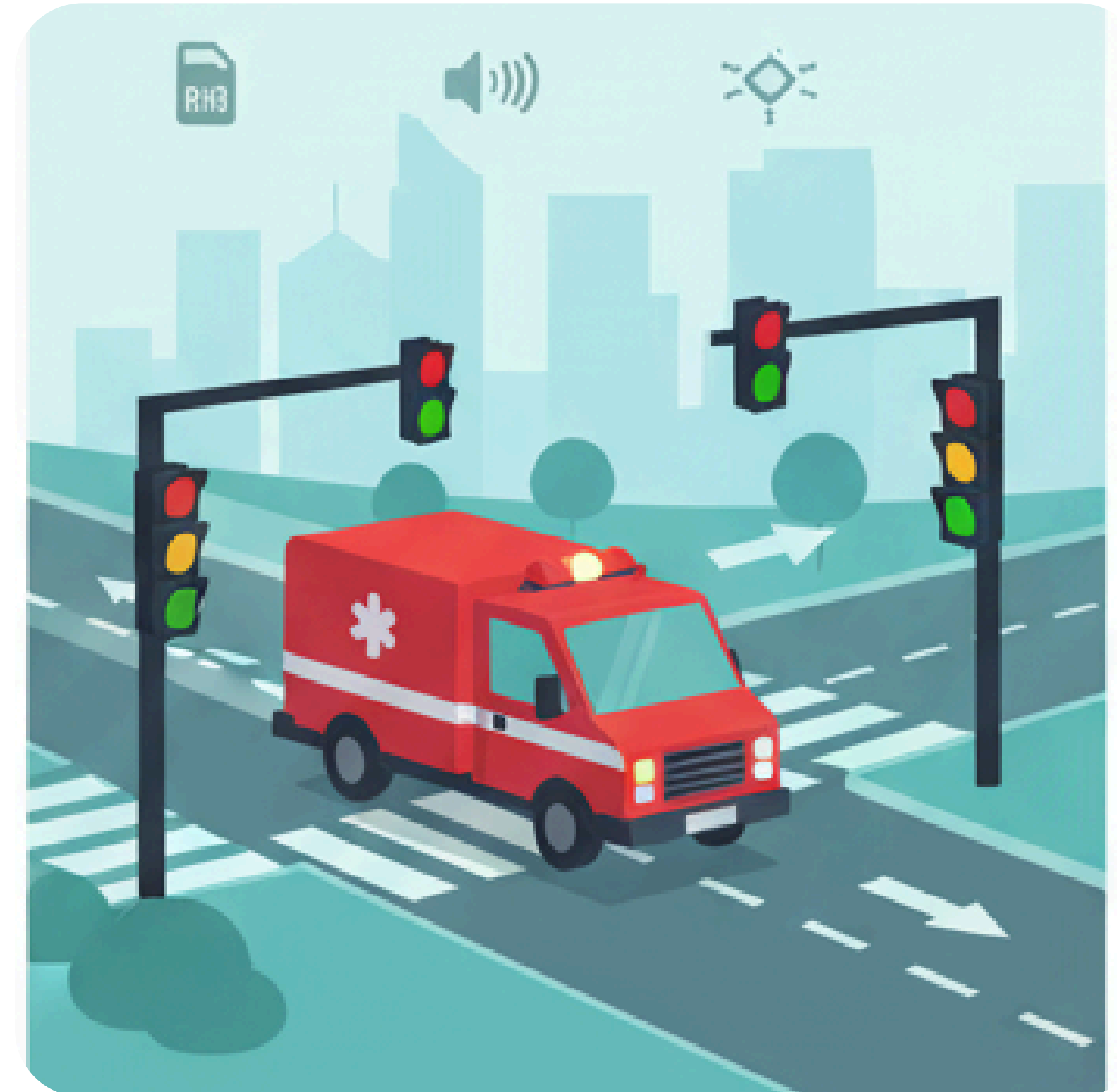
- Emergency vehicle prioritization
- Smart integration
- High congestion zones
- Real-time control

2. Potential Impacts

- Faster response
- Reduced congestion
- Public trust
- Smart city foundation

3. Benefits

- Emergency Services: Faster navigation
- Citizens: Safer roads
- Government: Cost-effective upgrade
- Environment: Reduced emissions



- <https://pmc.ncbi.nlm.nih.gov/articles/PMC5134551/>
- <https://www.borntoengineer.com/the-punishing-signal-did-mumbai-just-solve-the-its-honking-problem>
- <https://www.sciencedirect.com/science/article/pii/S2665917423000338>