

Billy Joel / Piano Man

To Beethoven, Deference

Pianists: Janak Ruia, Utkarsh & Harshit Agarwal

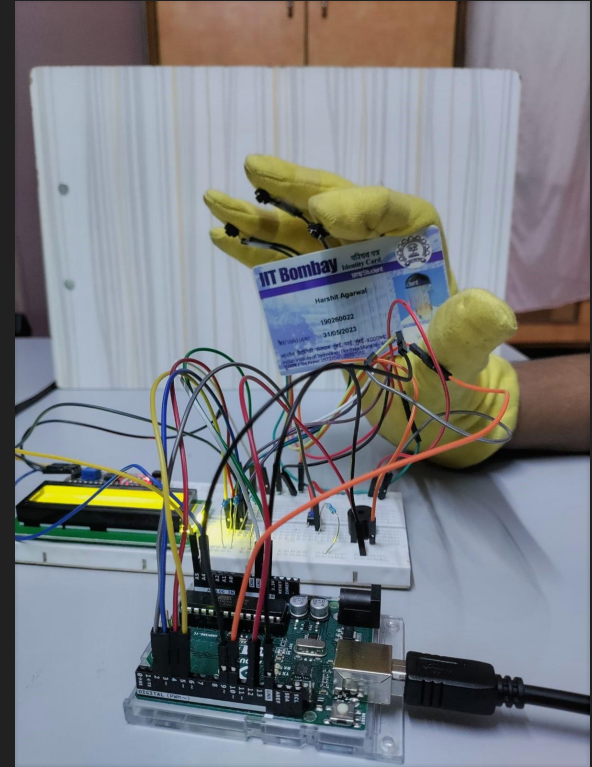
Motivation behind the project

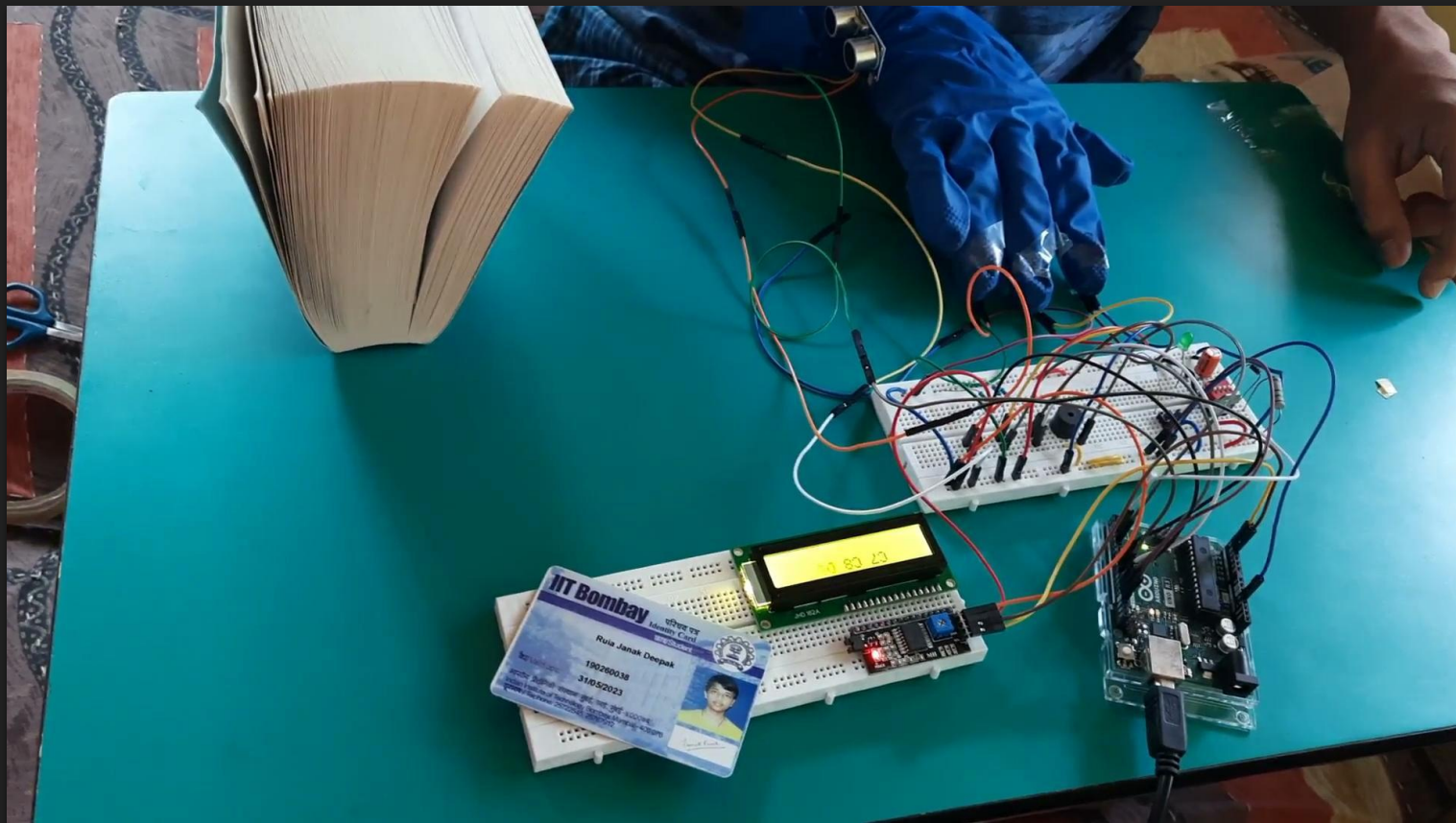
While brainstorming for ideas we oscillated between many concepts - from ones involving heavy software part like a game to ones relying on finger movements. After much deliberation we decided on a few (ridiculous) points:

- All of us wanted to do something which relied on input from our hands.
- We didn't want to build something too big
- We wanted our project to have independent blocks apart from a basic central structure so the entire project does not fall apart due to a technicality.
- A later realisation was to minimize the involvement of the laptops in the final code

Enter: The Glove

- An all surface piano glove
- Buttons on fingers simulate key presses
- An ultrasonic sensor helps mapping “nearby” keys
- EEPROM remembers the last played melody for a playback

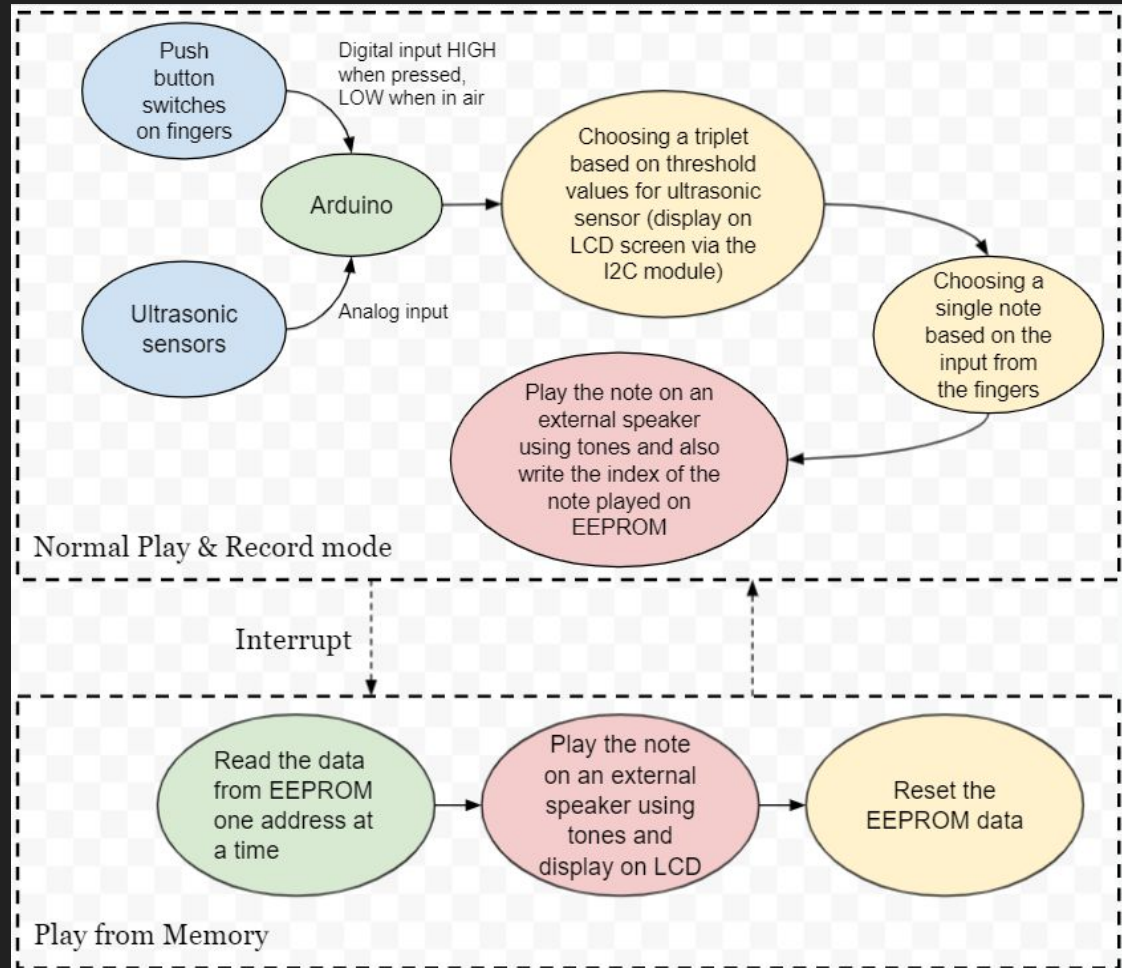




Demo

Code & Design

Block diagram
rehashed from the
project report.



Hits & Misses

- Added a LCD screen to display the playable notes in the “play mode” and the played note in the “playback” mode.
- Found and used the LiquidCrystal_I2C library and I2C module to massively simplify the connections of LCD screen
- Implemented a memory element using the EEPROM to store and play the notes
- The bulkiness of components prevented us from attaching some parts to the glove
- Rudimentary mechanical switch using a thin styrofoam film (cut from the IC pads) and attached wires on both sides were tried. They failed due to robustness, and were replaced by push-buttons



Learning Outcomes & Scope of Improvement

- Using the tone library for sounds
- I2C module for LCD connection
- Basics of EEPROM
- Importance of jumper wires
- Account for the delays between key presses while recording
- Try out a better method for making pressure sensors
- To simulate a real piano, some sort of vibration feedback could be added
- Simulate the sound of an actual piano using the Karplus -Strong Algorithm.



*Jumper Wire
god hota hai*

