Chess Smartboard

Team 5

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Motivation

Board games are a great way to socialize in person and playing online lacks the tactile feel of moving pieces by hand. However, online games can surpass physical limitations and bring in interesting rules and games. The smartboard aims to combine the best of both worlds.

How to use

There is currently no interface, so we start by going straight into the code and manipulating the starting board.

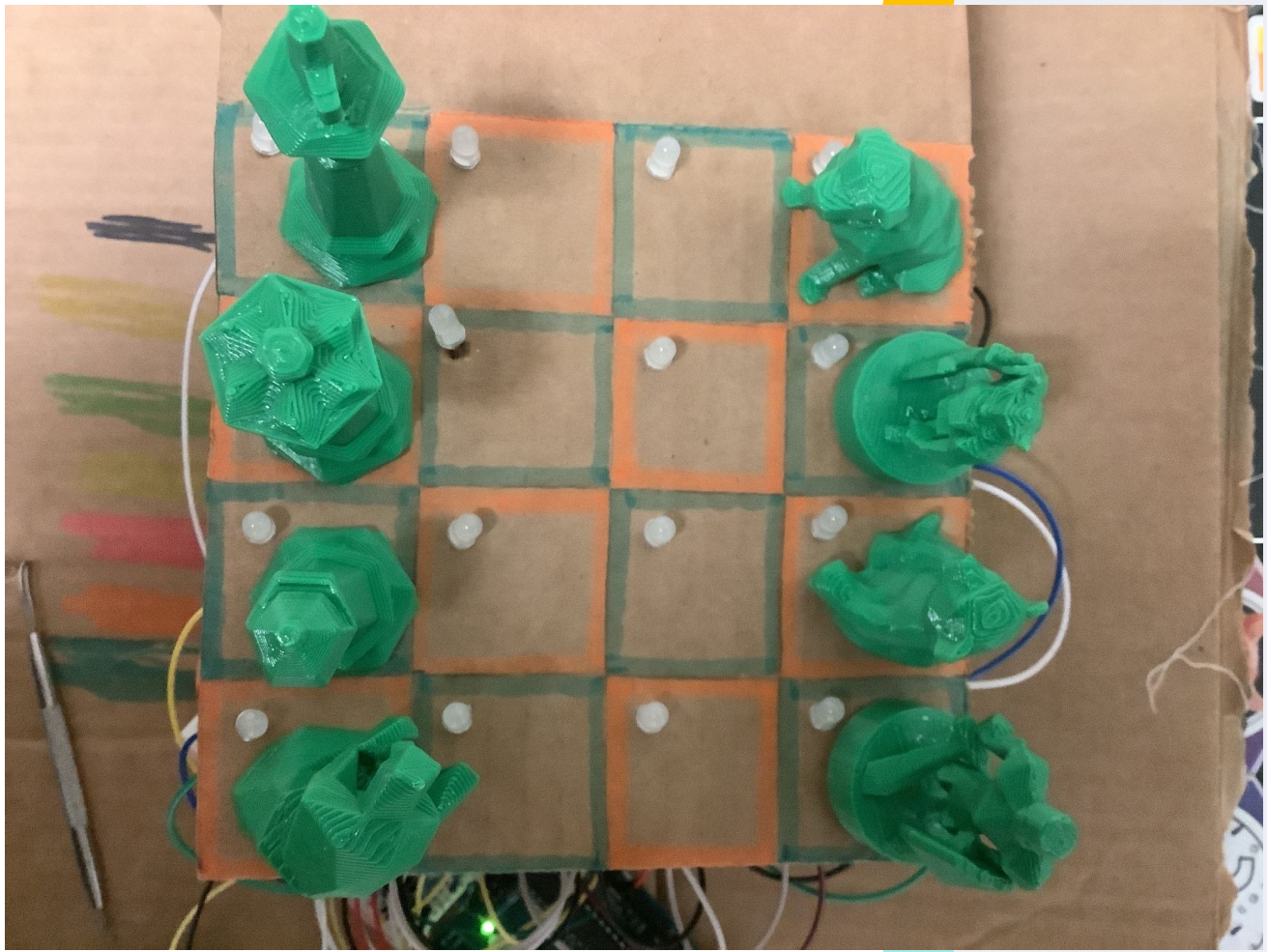
```
//set up pieces here, positive is one side, negative is other side
//King = 1
//Queen = 2
//Bishop = 3
//Knight = 4
//Rook = 5
//Pawn = 6 (positive pawns go on the left (aiem), negative pawns go on the right (dhlp)
//Jester = 7 (Changes between Bishop, Knight, and Rook every turn)
int pieces[ROWS*COLS] = {
  1,0,0,-6,
  2,0,0,-5,
  3,0,0,-1,
  4,0,0,-7
};
```

Changing the contents of the pieces array determines starting location of pieces

Set up the matching pieces on the board.

Compile and upload the code onto the arduinos.

Play!



Contributions

Richard Gross:
I basically did everything.

Thang Tong: Was active near the beginning but disappeared near the end

Pratheek Sankeshi, Snir Kinog: These two were present the first day but disappeared afterwards

Real-world applications

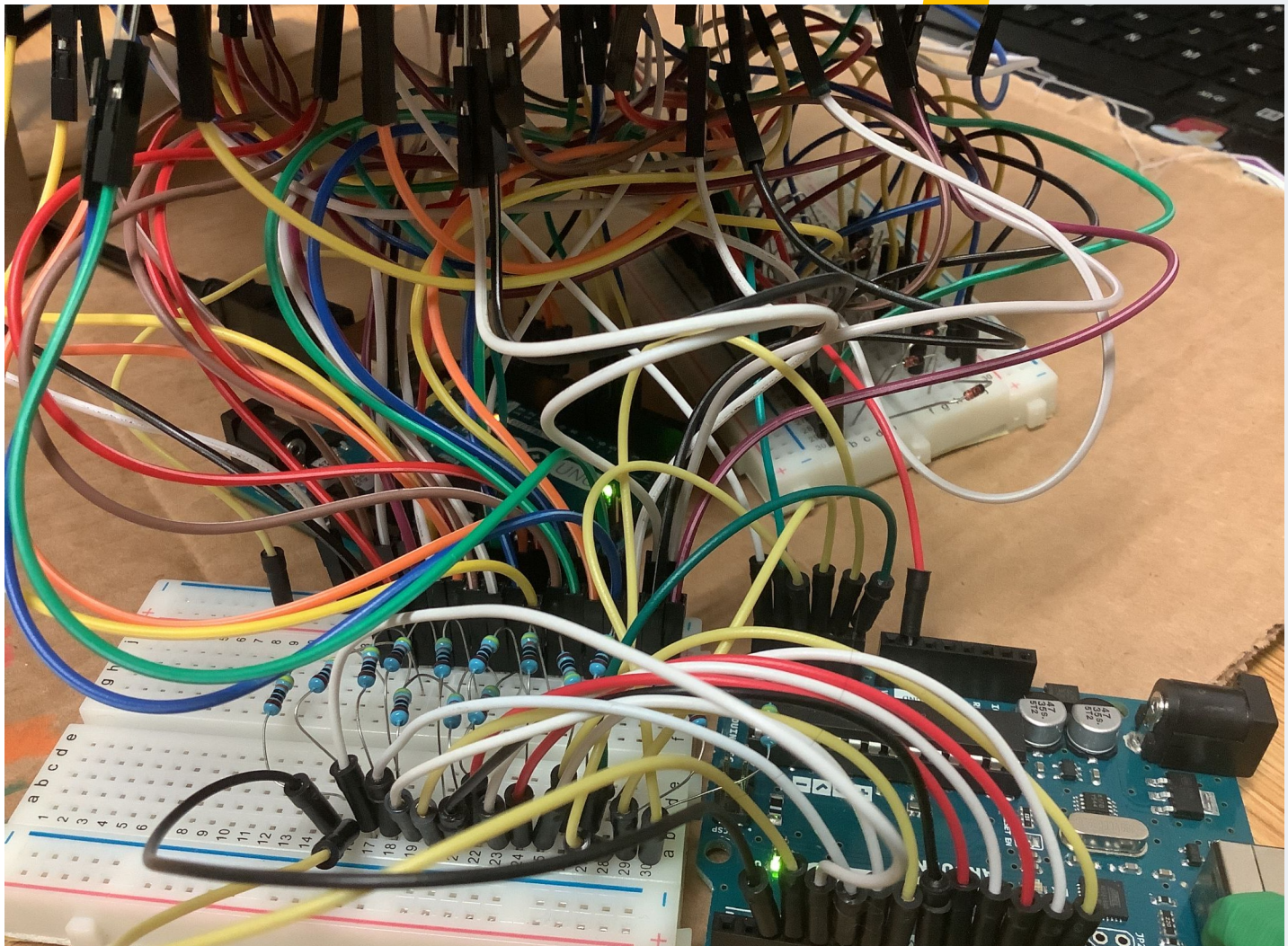
The current version is basically a prototype, but a completed version would allow for much more versatility in board games, such as random events or pieces with hidden movesets and rules to add diversity into a normal game chess, and therefore have more fun and creative games, all doable in person without needing to play online..

Difficulties and Challenges

Biggest difficult was figuring out how matrices worked and wiring it all up. This was basically solved by using a keypad library so I did not have to code the matrix logic which is really complicated, just set up all the wires correctly.

Also...

Wires galore



Improvements/Enhancements

While an obvious improvement would be to expand to 8x8 board, would take more than 2 weeks and quadruple the resources.

Add an interface (an app?) so no need to compile/upload new board setup every time.

Improvements/Enhancements

Add more interesting game rules other than just the jester piece with changing movesets, such as pieces with hidden movesets that are only revealed when they take a piece, or adding random squares that change every game where pawns can promote to queens and not just the end of the board

Conclusion

Overall learned a lot about how arduinos work, as well as how matrices work.

Github link to code and credits

https://github.com/ucsdRgross/smartboard