

8*8*8 LED CUBE

Murat BALTACI

Supervisor Prof.Dr. Nuran DOĞRU



Department of Electrical and Electronics Engineering, University of Gaziantep, Turkey.

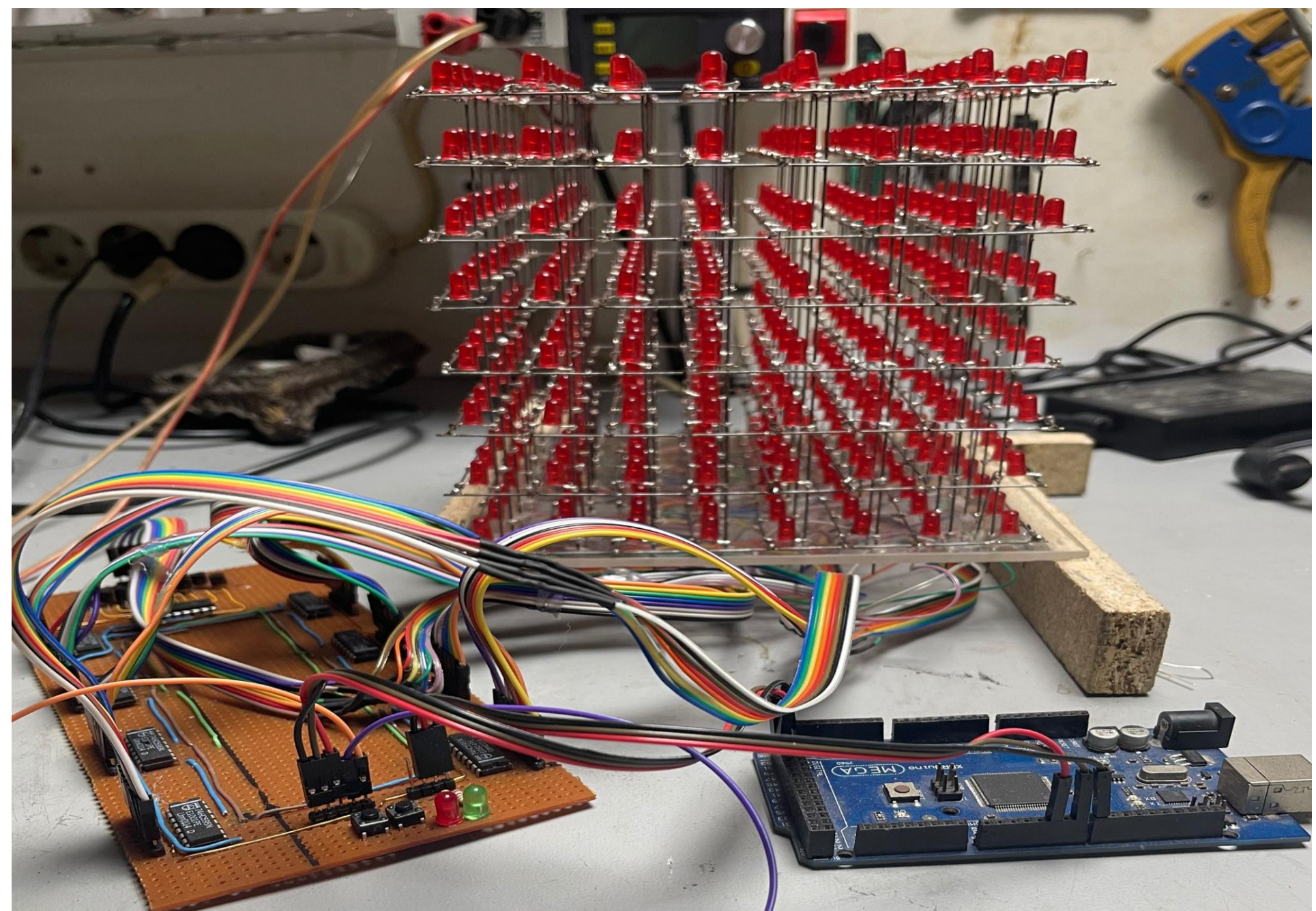
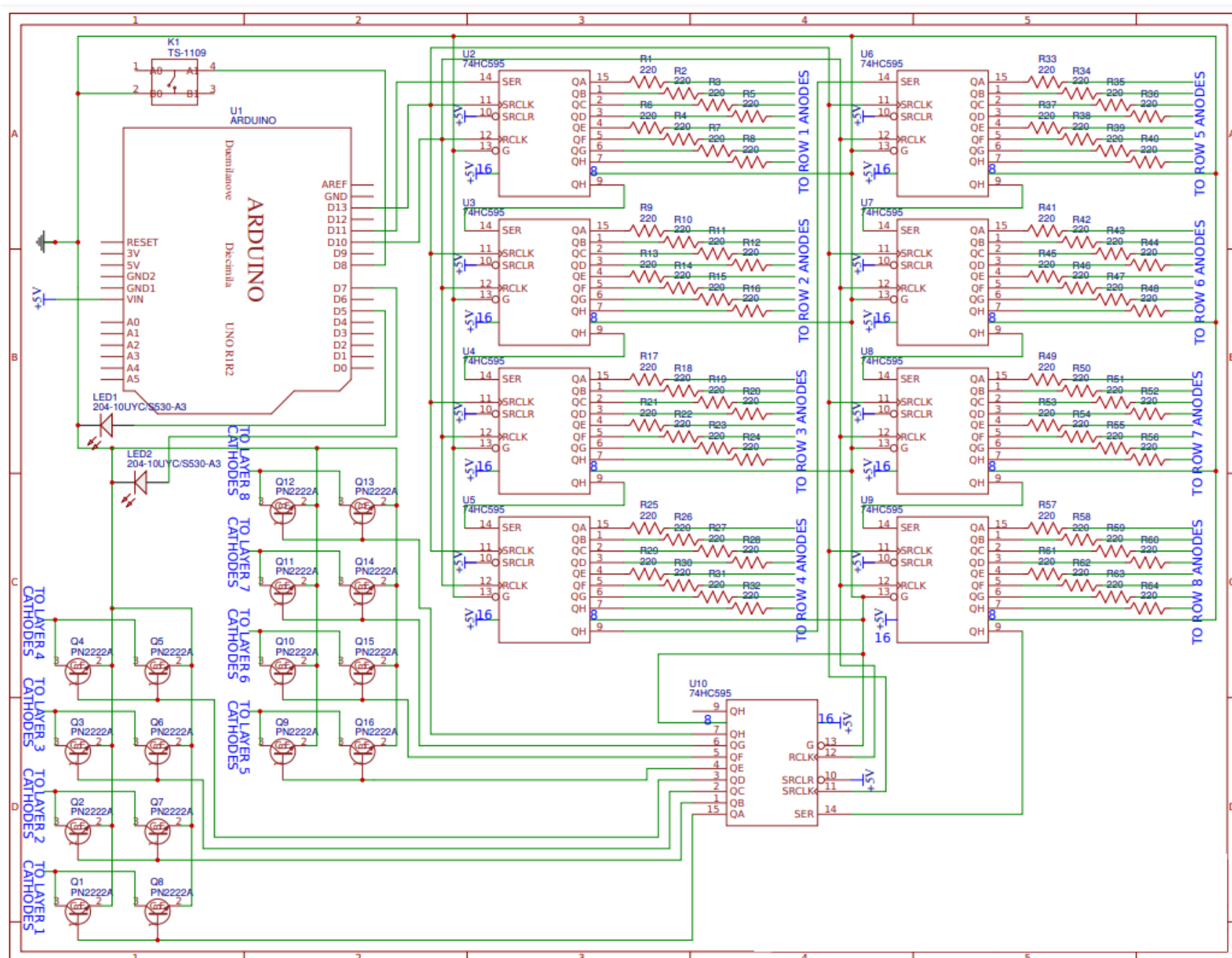
Abstract

This report presents the design and implementation of an 8x8x8 LED cube. The project aims to display visual effects through LEDs arranged in a three-dimensional cube. Using an Arduino-based control system, the LEDs are sequentially turned on and off. The project includes electronic circuit design, software development, and system integration.

Main Components

Arduino Mega , 74HC595 , 2n222 , Red LED , Stell Wire , 5v 2a Power Supply

Electrical Design



Main board

The main board in an 8x8x8 LED cube project serves as the central control unit. It manages the power distribution and timing for the LEDs, ensuring synchronized illumination patterns. This board interfaces with a microcontroller, which executes the programmed sequences and effects. Additionally, it handles signals input from external sources, allowing dynamic changes to the cube.

Conclusion

In conclusion, the 8x8x8 LED cube project has provided invaluable hands-on experience in electronics and programming. Through constructing and programming the cube, we gained a deeper understanding of circuit design, microcontroller programming, and LED control techniques. This project enhanced our skills in troubleshooting and problem-solving, and it introduced us to various communication protocols. Additionally, it demonstrated the importance of precise timing and synchronization in creating complex animations. Overall, the project was a comprehensive learning experience, merging theoretical knowledge with practical application.

References:

- [1] T. Rose, "Building a 8x8x8 LED Cube," Instructables, [Online]. Available: <https://www.instructables.com/Building-a-8x8x8-LED-Cube/>
- [2] M. Grimm, "8x8x8 LED Cube," Arduino Project Hub, [Online]. Available: <https://create.arduino.cc/projecthub/MadGyver/8x8x8-led-cube-993ce0>
- [3] E. Tabik, "8x8x8 LED Cube," GitHub, [Online]. Available: <https://github.com/ellisiumx/8x8x8-LED-Cube>