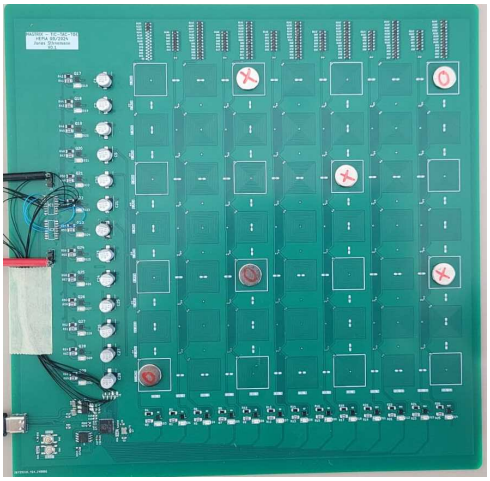
ABSTRACT

When chess enthusiasts want to watch grandmaster games live, they often rely on computer screens. This project aims to bring board games back to the physical world by developing a board that can automatically move pieces. Controlled by a computer, it can be connected to any API, the board can be used for real-time game tracking or play. While this thesis focuses on a Tic-Tac-Toe game, the core technology is adaptable to any board game, with potential for scaling the board size as needed. The project involved designing a PCB, developing firmware, and creating a simple web app. The key innovation is using coils etched onto the PCB to attract pieces embedded with magnets. The process included testing various coil designs to find the most effective one and ensuring scalable control options. The final product is a Tic-Tac-Toe board with a 3x3 playable zone and storage for pieces that have not yet been placed. It also comes with a full web-based interface to control the game via a backend communicating with the board via serial. Despite some minor issues that required manual adjustments, the project demonstrates significant potential for future expansion and application. The actual concept works with a single magnet but when trying to play with multiple bare magnets, the attraction between them is too strong and make the game unplayable since they attract each other. The issue could probably be resolved by using a different pieces design or by making the inter magnet distance bigger.



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