IOWA STATE UNIVERSITY
Department of Electrical and Computer Engineering

Senior Design Project Proposal Form

Client/Company/Organization:

Submitter Name: Joseph Zambreno **Email:** zambreno@iastate.edu

Project Contact: **Email:**

Project Title:

Automated Chess System

Project Abstract:

The goal of this project is to create a modern computerized chess playing system that uses a magnetic system to automate the movement of individual pieces. An Arduino or similar microcontroller will interact with the chess playing surface and individual pieces, detecting human movements, moving the computer AI's pieces at the appropriate time, and determining capture and end-game conditions. A configuration application will allow capture and broadcast individual games and allow the board to be remotely reset.

https://www.youtube.com/watch?v=AQLOj-TylGg (overview of the existing state-of-the-art)
https://www.youtube.com/watch?v=j7Iq3HkebhM (an inside look)
https://www.youtube.com/watch?v=SWy9z3WKNyg (comparison to older approaches)

Expected Deliverables:

Project will be demo-able at various departmental events (ex: Scholars' Fair)

Specialized Resources Provided by Client:

Anticipated Cost: **Financial Resources Provided by Client:**

Preferred Students for the Project:

- ☑ Electrical Engineering
- ☑ Computer Engineering
- ☐ Software Engineering
- ☐ Cyber Security Engineering
- ☐ Other:

Other Special Skills: Some Arudino and light CAD skills would be preferable.

Anticipated Client Interaction (estimate):

- ☑ 1 meeting per week
  - ☑ In person, ☐ Over the phone, ☐ Web / video conferencing
- ☐ 1 meeting per month
  - ☐ In person, ☐ Over the phone, ☐ Web / video conferencing
- ☐ 2 or more meetings per month
  - ☐ In person, ☐ Over the phone, ☐ Web / video conferencing
- ☐ 1 meeting per semester

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Meeting ABET Criteria

Please rate the following statements as they relate to your proposed project:

	0 – Not at all	*1 – A Little*	*2 – Somewhat*	*3 – A Lot*	*4 – Completely*
On this project, students will need to apply knowledge of mathematics, science, and engineering	☐ 0	☐ 1	☐ 2	☐ 3	☑ 4
This project gives students an opportunity to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	☐ 0	☐ 1	☐ 2	☐ 3	☑ 4
This project involves students from a variety of programs, i.e., CprE, EE, and SE	☐ 0	☐ 1	☐ 2	☐ 3	☑ 4
This project requires students to identify, formulate, and solve engineering problems	☐ 0	☐ 1	☐ 2	☐ 3	☑ 4
This project gives students an opportunity to use the techniques, skills, and modern engineering tools necessary for engineering practice	☐ 0	☐ 1	☐ 2	☐ 3	☑ 4

Project Approval – *for use by ECpE Senior Design Committee*

☑ Approved:

☑ Project Assigned: sdmay22-13

☑ Advisor(s) Assigned: Joseph Zambreno (zambreno@iastate.edu)