A Report on

"Online Chess Game Using MiniMax And Websocket Synchronization Algorithm"

Submitted in partial fulfilment of requirements of

Bachelor Degree in Computer Science and Information Technology

Submitted to:

Tribhuvan University

Institute of Science and Technology

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TRIBHUVAN UNIVERSITY

INSTITUTE OF SCIENCE AND TECHNOLOGY

MECHI MULTIPLE CAMPUS

CERTIFICATE OF APPROVAL

The undersigned certify that they have read and recommended to the Department of Computer Science and Information Technology, IOST, Mechi Multiple Campus, a project report entitled “Online Chess Game Using MiniMax And Websocket synchronization Algorithm” submitted by Bishal Murmu , Aakash Bhandari, Sandesh Sitaula. The Project was carried out under special supervision and within the time frame prescribed by the syllabus.

We found the students to be hardworking, skilled and ready to undertake any related work to their field of study and hence we recommend the award of partial fulfillment of Bachelor’s degree of Computer Science and Information Technology.

SUPERVISOR'S RECOMMENDATION

I hereby recommend that this project prepared under my supervision entitled "Online Chess Game using MiniMax and Websocket Synchronization algorithm" in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology be processed for the evaluation.

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Raju Poudel
Lecturer
Mechi Multiple Campus

ACKNOWLEDGEMENT

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It gives us immense pleasure to express our deepest sense of gratitude and sincere thanks to our highly respected and esteemed guide Sir Raju Poudel, Lecturer, for his valuable guidance, encouragement, and help in completing this work.

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ABSTRACT

Online Chess Game is a web-based platform designed to provide users with an interactive and seamless environment to play casual chess. It allows both multiplayer mode where players can challenge each other in real-time or single player mode compete against a computer opponent. The platform features a simple, intuitive interface that ensures an enjoyable experience for all users. The game is built using the WebSocket protocol to enable real-time synchronization, ensuring smooth communication between players. When playing against the computer, the Minimax algorithm is implemented along with Alpha-Beta pruning to make optimal moves based on the current state of the game. WebSocket synchronization algorithms are also employed to maintain consistency and ensure that game state updates are accurately reflected across devices. The project aims to deliver a responsive and stable chess-playing experience through the effective use of these technologies, providing both competitive and casual players with a platform to enjoy the classic game of chess. Also, the game logic has been thoroughly tested to ensure accurate gameplay, smooth interactions, and minimal errors, offering a reliable gaming experience.

Keywords:Web Application,WebSocket Protocol, Alpha-Beta Pruning, Minimax Algorithm, Real-Time Synchronization, Game Logic Testing, Chess Game

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