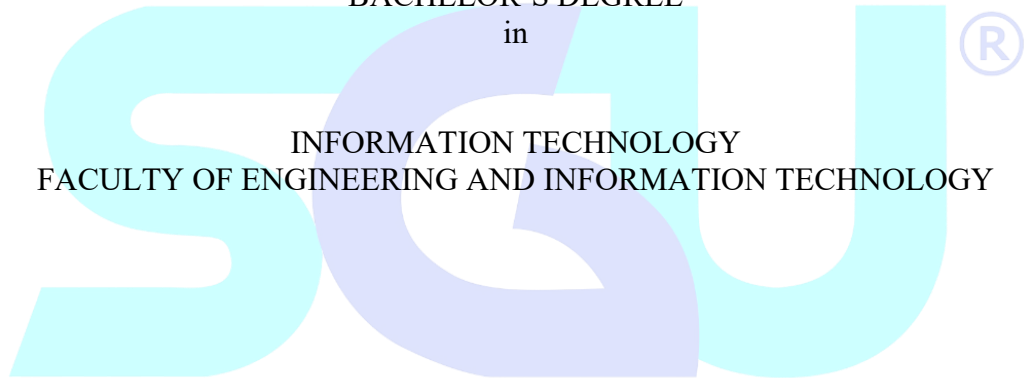


**Crisis-Aware and Memory-Augmented Agentic AI for
Real-Time Strategy Games**

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in
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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.



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ABSTRACT

CRISIS-AWARE AND MEMORY-AUGMENTED AGENTIC AI FOR REAL-TIME STRATEGY GAMES

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This research presents the design and evaluation of a crisis-aware and memory-augmented agentic artificial intelligence (AI) framework for Real-Time Strategy (RTS) games. The study aims to overcome key limitations in existing RTS AI systems, specifically the lack of crisis awareness, long-term strategy coherence, and limited integration of memory and crisis modules. A prototype-based experimental approach was employed using Unity and the ML-Agents Toolkit, integrating Python for reinforcement learning and memory augmentation through semantic and episodic components. The architecture consists of four primary modules: Perception, Planning, Execution, and Reflection. Together, they enable adaptive reasoning, strategic learning, and rapid crisis response. Evaluation was performed using simulated matches against baseline agents (Scripted AI and RL-only AI) under both normal and crisis conditions. The proposed AI achieved an 80.0% Win Rate, significantly outperforming baselines, while demonstrating swift recovery times verified by statistical significance ($p < 0.05$) and maintaining competitive resource efficiency. Results indicate that combining crisis-awareness and memory augmentation enhances adaptability and stability.

Keywords: Agentic AI, Large Language Models (LLM), Crisis Detection, Memory Augmentation, Real-Time Strategy Games, Unity ML-Agents.



DEDICATION

This work is dedicated to everyone who continues to push the boundaries of learning
and creativity in AI and Game Development



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