YS-9 — Quantum Game Theory

CS 4850 - Section 01 – Spring 2023

February 3, 2023

Christian Thomassy **Cody Lacey** **Sean Curtis**

Project Team

Roles	Name	Responsibilities	Cell Phone	Email
Project Owner	Yong Shi (Project Owner)	Provide project details; act as a resource for specifics on deliverables; critique milestones and final projec	(470) 578-6423	yshi5@kennesaw.edu
Team Leader	Christian Thomassy (Team Lead)	Documentation, Schedule Meetings	(678) 910-7868	thomassycm@msn.com
Team Member	Sean Curtis	Coding and Developing	(678) 708-5344	seanjcurt@gmail.com
Team member	Cody Lacey	Coding and Developing	(912) 253-4341	clacey2256@gmail.com
Advisor/ Instructor	Sharon Perry (Advisor)	Facilitate project progress; advise on project planning and management.	770-329-3895	Sperry46@kennesaw.edu

Overview

Quantum computing is a new type of qubit enabled computing paradigm based on the quantum properties such as superposition, interface and entanglement for data process and other tasks. It can be used to work on problems traditional supercomputers would not be able to handle efficiently. Classical game theory is a process of modeling that is widely used in AI applications. The extension of this theory to the quantum field is the quantum game theory. It can be a promising tool for overcoming critical problems in quantum communication and the implementation of quantum artificial intelligence. This project will begin with learning of quantum computing and game theory, then followed by the

development of a system that applies quantum computing to game theory and analyze their performance.

Project website

https://www.qgtheory.info/

Final Deliverables

1. Research Paper- properly documented research conducted
2. Prototype- presentable model of research and testing conducted
3. Presentation
4. Website

Milestone Events

#1 - By March 17th

- Prototype Presentation

#2 - By April 14th

- Draft of Final Report

Deliverables

Research Concentration (Group)

Team Selection document (Individual)

Weekly Activity Reports (WARs - Individual)

Peer Reviews (Individual)

Project Plan (Group)

Present Prototype for Peer Review (Group – usually called Milestone 1 or M1)

Website (Group)

Video Demo (Group)

C-Day Application/Submission (Group – Bonus Points)

Final Project Report (Group)

Meeting Schedule Date/Time

Milestone Meetings: #1 March 17th

#2 April 14th

Group Meeting times:

5:30pm-8:00pm Tuesday, Thursday

10:30am-5:00pm Friday

Collaboration and Communication Plan

1. Google Colab (Coding Environment)
2. Github (Team Website)
3. Discord (Team Member Communication)
4. Teams (Team Owner and Advisor meetings)

Project Schedule and Task Planning

Project Name:	Quantum Game Theory																		
Report Date:	2/3/2023																		
					Milestone #1				*Milestone #2*				*Milestone #3*				C-Day	
Deliverable	**Tasks**	**Complete%**	**Current Status Memo**	**Assigned To**	**02/01**	**02/10**	**02/17**											
Research	Meet with stakeholder(s)	100%	Meet with Yong Shi	Team	1													
	Study Quantum Computing	0%																
	Study Game Theory	0%																
	Decide on Project Concentration	0%																
Project design	Define tech required *	0%	Google Colab		1													
	Platform	0%	Pennylane/Tensorflow															
	Start Coding Implementation	0%																
	Develop working prototype	0%																
	Finish Protoype	0%																
	Test prototype	0%																
Development	Review prototype design	0%																
	Rework requirements	0%																
	Document updated design	0%																
	Test product	0%																
Final report	Presentation preparation	0%																
	Poster preparation	0%																
	Final report submission to D2L and project owner	0%																
			Total work hours	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	* formally define how you will develop this project including source code management																		

Version Control Plan

Maintain and utilize Google Collab for the Sr. Project; where all code is shared and run.