

**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	<a href="mailto:yshi5@kennesaw.edu">yshi5@kennesaw.edu</a>
Team Leader	Christian Thomassy (Team Lead)	Documentation, Schedule Meetings	(678) 910-7868	<a href="mailto:thomassycm@msn.com">thomassycm@msn.com</a>
Team Member	Sean Curtis	Coding and Developing	(678) 708-5344	<a href="mailto:seanjcurt@gmail.com">seanjcurt@gmail.com</a>
Team member	Cody Lacey	Coding and Developing	(912) 253-4341	<a href="mailto:clacey2256@gmail.com">clacey2256@gmail.com</a>
Advisor/ Instructor	Sharon Perry (Advisor)	Facilitate project progress; advise on project planning and management.	770-329-3895	<a href="mailto:Sperry46@kennesaw.edu">Sperry46@kennesaw.edu</a>

## 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

<b>Project Name:</b>	Quantum Game Theory														
<b>Report Date:</b>	2/3/2023														
Deliverable	Tasks	Complete%	Current Status Memo	Assigned To	Milestone #1			Milestone #2			Milestone #3			C-Day	
					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 Prototype	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
* 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.

**SCOPE OF WORK IS STILL IN PROGRESS**

**Signed by:**

Project Owner

Date