

# Cloud Gaming and Simulation in Distributed Systems

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**Submitted in accordance with the requirements for the degree of  
Computer Science**

2015/16

The candidate confirms that the following have been submitted.

<As an example>

Items	Format	Recipient(s) and Date
Deliverable 1, 2, 3	Report	SSO (DD/MM/YY)
Participant consent forms	Signed forms in envelop	SSO (DD/MM/YY)
Deliverable 4	Software codes or URL	Supervisor, Assessor (DD/MM/YY)
Deliverable 5	User manuals	Client, Supervisor (DD/MM/YY)

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## Summary

Cloud computing attempts to enable access to high-end graphics intensive games to a wider audience by using powerful data centers. The process of delivering cloud gaming includes processing the user input for the game engine then encoding this as video and streamed to the end user. Due to another added layer of complexity, other problems arise and the aim of this project is to tackle networking issues in the cloud to reduce the latency experienced by the user.

The Software-Defined Networking paradigm allows the management of network technology without the need of touching individual switches. This project will discuss the effects of using SDN for cloud gaming in a distributed system.

## **Acknowledgements**

<The page should contain any acknowledgements to those who have assisted with your work. Where you have worked as part of a team, you should, where appropriate, reference to any contribution made by other to the project.>

Note that it is not acceptable to solicit assistance on ‘proof reading’ which is defined as the “the systematic checking and identification of errors in spelling, punctuation, grammar and sentence construction, formatting and layout in the test”; see <http://www.leeds.ac.uk/gat/documents/policy/Proof-reading-policy.pdf>.

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# Chapter 1

## Introduction

### 1.1 Context

Cloud computing has always been seen as a way of improving compute performance by the use of multiple computers connected to each other. The games industry has rapidly evolved along the years and a great deal of demand is apparent. Developers of games have pushed computer hardware to meet the needs of consumers for more complicated games and realism. Even with computer hardware becoming cheaper and more of a commodity, the costs of driving graphics rendering for high-end games to run at the optimal settings of 1080p at 60fps are still relatively high.

### 1.2 Project Aim

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### 1.3 Project Objectives

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## 1.4 Deliverables

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## 1.5 Project Schedule

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# Chapter 2

## Background Research

### 2.1 Problem Overview

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### 2.2 Cloud Computing

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### 2.3 Cloud Gaming

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## 2.4 Latency Mitigation

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## 2.5 Related Works

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# References

- [1] D. Parikh, N. Ahmed, and S. Stearns. An adaptive lattice algorithm for recursive filters. *Acoustics, Speech and Signal Processing, IEEE Transactions on*, 28(1):110–111, 1980.



# Appendices



# Appendix A

## External Material

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# Appendix B

## Ethical Issues Addressed