



Evaluating Player Behavior by Operant Conditioning Parameter in Multi Modal Games

By

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A Dissertation Submitted For the Degree of Master in Computer Science in the
Department of Computer Science, Faculty of Systems and Technology,
University of Management and Technology.

May 2017

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Final Approval

It is certified that the research work presented in this thesis entitled “Evaluating Player Behavior by Operant Conditioning Parameter in Multi Modal Games” was conducted by Zurabia Riaz under the supervision of Dr. Shoaib Farooq at University of Management and Technology, Lahore, Pakistan in May 2017 to fulfil the requirement of the degree in Ms/Mphil Computer Science.

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Declaration

I declare that this declaration is my own original work. Where collaborations with other researchers are involved, or materials generated by other researchers are included, the parties and/or materials are acknowledged or are explicatory referenced as appropriate.

This work is being submitted to the University of Management and Technology in partial fulfilment of the requirements of the degree of Master of Philosophy in Computer Sciences. This thesis has not been submitted to any other University or institution for any degree or examination.

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Publications

The ideas, figures and tables of this paper have previously approved in the following publications:

Zurabia Riaz , Nauman Shah , Shoaib Farooq, “Evaluating Player Behavior Based on Operant Conditioning Parameter in Multi Modal Games”, *FAST-NU Research Journal (FRJ)*, Volume 2, Issue 1, January 2016 (Published)

Zurabia Riaz , Nauman Shah , Shoaib Farooq, “Operant Conditioning Parameter to Evaluate Players’ Behavior in Multi Model Games”, *Dynamic Games and Applications Journal (DGA)*, Volume 7, Issue 26, May 2017 (in process)

Zohaib Ahmad Butt, Shoaib Farooq, Zurabia Riaz , “A Framework to Access the Impact of ERP Tool Based Learning and ERP Simulation Based Learning on key user’s Motivation and Performance”, *Journal of Management and Research (JMR)*, Volume 4, Issue 1, April 2017 (Submitted)

Acknowledgements

I would like to thank Allah who always there for me as my biggest Support. Moreover I would like to express my gratitude towards my principal supervisor **Dr. Shoaib Farooq** I might want to express gratitude toward him for his priceless exhortation, direction and support over the span of this exploration. He is really the most determined and propelled individual I have ever met, and has been such a motivation. I would by and by express gratitude toward him for his understanding and adaptability and would also like to apologize to him for all the times I have been a complete nuisance.

I would also like to thank my Co-Supervisor, **Dr. Nauman Shah**, for his assistance and guidance and most of all his friendship. This MPhil/MsCs would not have been possible without his constant help and support. I would like to thank him for always being there to help me by going out of his way.

Finally, and most importantly, I would like to dedicate my MPhil to **Syed Tauqeer Ullah Shah** who was always there for my spiritual guidance. My parents for being the bedrock upon which my life has been built. I am truly in debt of my father **Malik Riaz Haider**'s never-ending support, encouragement and my mother **Kauser Riaz**'s love and motivation. I would like to thank **Mr&Mrs Husnain Riaz, Mr&Mrs Ali Riaz and Umer Riaz**. I also like to say thanks to my Aunt **Kanwal Firdous** and Uncle **Irshad Malik**. Additionally, thankful to my cousins **Anum Fayyaz, Abrish Zainab** and **Mobeen** for their care. I would also like to thank **Zohaib Ahmad Butt** who was always there to stand up me throughout this degree at the University for making these one of the most memorable times of my life.

Dedication

This thesis is dedicated to Syed Tauqeer Ullah Shah, his family

And

To my Parents their proficient, guidance and splendid inspiration

had positively influenced my life and made me capable

Of attaining this degree

Successfully.

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Abstract

Video games have been associated with high user engagement as they provide an immersive and interactive environment attracting players' attention for long durations of time. This is done through incorporating different game design techniques encouraging high user engagement, motivation and participation. Real-time feedback in games is one such design parameter which is used to inform the player of the consequences of their actions within the game. In games real-time feedback behavior can be determined by using operant conditioning. Operant conditioning is a type of learning which modifies the behavior of an individual through positive and negative feedback as form of rewards and punishments, eliciting specific controlled behavior.

The strategy includes following steps (i) identify Operant Conditioning parameter that can influence compliance, make the activity prolonged, actively participation of the players and players motivation, (ii) use of Operant Conditioning parameter in order to design general purpose games for players, (iii) explore the effects of Operant Conditioning parameter on the motivation, engagement and performance of player. Studies were conducted with players to determine their behavior. The study identified the effects of the design parameter on players 'motivation, Players' Performance and Players' Game Play Duration. Experiments and results were conducted to evaluate the player behavior.

In summary, the research undertaken during this MPhil in Computer Sciences successfully identified the design techniques influencing players 'motivation, Players' Performance and Players' Game Play Duration using Operant Conditioning. Design and test a game in order to observe the effectiveness and then examine the impact of incorporating operant conditioning in feedback of the game by monitoring the gameplay duration, player motivation and performance.

1. Chapter 1 Introduction

Chapter Abstract-The introduction chapter provides an overall outline that includes brief overview to the research area and the motivation reason behind this research. Moreover in this chapter a comprehensive discussion has been performed on highlighting all the chapters' main theme including research objectives, research questions, methods & methodology, experimental setup, results and future directions that will be discussed later on in following chapters.