FYP Interim Report

*Monitoring User Preferences - An Application to Desktop Environments*

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Table of Contents

|  |  |
| --- | --- |
| Section Title | Page |
| Table of Contents | *1* |
| [Project Summary](#_Project_Summary) | *2* |
| 1. Introduction and Objectives | *3* |
| 1.1 Introduction | *3* |
| 1.2 Motivation | *4* |
| 1.3 Objectives of Project |  |
| 2. Research |  |
| 2.1 Introduction |  |
| 2.2 Papers |  |
| 2.3 Existing Projects |  |
| 2.4 Other Sources |  |
| 3. Description of Current Progress |  |
| 3.1 Introduction |  |
| 3.2 Problems Faced |  |
| 4. Project Plan |  |
| 4.1 Introduction |  |
| 4.2 Testing |  |
|  |  |
|  |  |

Project Summary

Monitoring User Preferences - An Application to Desktop Environments

*A critical requirement of software systems is to satisfy the needs of the user.*

The focus of this project will be on desktop environments and will be aimed to identify strategies to capture user preferences and detect changes. This is intended to be done explicitly by requesting user feedback, as well as implicitly through mining of user behaviour or system logs.

Proper user preference specification is believed to be very important for maximum user enjoyment when using software. Much effort by software companies goes into designing these user interfaces to be appropriate for their intended users. This includes research as well as extensive user testing.

Many modifications or extensions exist for software in order to facilitate users further, such as saving settings for use on multiple desktops. These are frequently third-party and many are made and shared by users facing similar problems.

However many users are not fully aware of the configuration capabilities of a system. Advanced configuration options can also intimidate novice users of a system.

This report is organised as follows. The following section, **Chapter 1: Introduction**, will further explain what is meant by “Monitoring User Preferences” as well as describing the project in detail.

**Chapter 2:** **Research** will describe the research done in order to prepare for the project including papers read and existing projects.

**Chapter 3: Details of Current Progress** details the non-research work completed at the time of the writing of this report and **Chapter 4: Project Plan** will illustrate the work to be done before the project is finished.

1: Introduction and Objectives

# 1.1 Introduction

## Description

The enormous growth in web content and software applications as well as the increased popularity of these products has led to increased demands for user accessibility. In recent years, there has been much effort put into developing user-adaptive web-sites and applications (Perkowitz & Etzoni, 1999).

Though many techniques exist, a commonly used method is based upon monitoring User Preferences. User preferences are frequently assessed in order to improve the user experience.

This project is intended to study and monitor these preferences in order to allow for the optimal experience for users of all levels.

This will be accomplished through the gathering of information from the user and modification of the desktop environment accordingly. This will be done explicitly through user feedback such as user-defined settings or implicitly through data logging and mining.

Many existing studies and papers have already dealt with similar topics and these will be detailed later in the **Research** section of the report. This project is intended to focus some of these studies into a single project.

### What are User Preferences?

A user is any person who uses a computer or network service. User Preferences can be described as “Specifications or settings for features of a software program as defined by the user.”

These are usually options selected by users in order to simplify or enhance their experience while using a software program.

Explicitly defined examples include simple alterations such as colour, font, or language as well as more advanced modifications such as key-binding or behavioural changes.

## Overview

Though numerous ideas and possible proposals were considered, the approach selected for this project is an extension designed for Netflix, a popular movie and television streaming service.

The goals for the planned extension are for it to contain various methods of retrieving data from the user through feedback such as buttons and option pages, as well as monitoring the user tastes in movies and television shows in order to further present recommendations and alter the interface accordingly.

# 1.2 Motivation

Do later.

Interest in Machine Learning and Artificial Intelligence

# 1.3 Objectives of Project

The objectives of this project will be to create a program capable of adapting to the user’s requirements. This will be done as mentioned previously through the monitoring of the user’s habits and preferences.

This project will then be distributed for testing and results of this testing will be analysed further in accordance with the ideals of the proposed topic. These findings will then be compiled into a report in order to further express the results of the project.

Prior to conducting this research, I felt it necessary to examine past and current research in this area. This existing research has been presented in **Chapter 2** along with a summary of the initial findings, while **Chapter 3** will present the work that has been completed thus far. Finally **Chapter 4** will detail the work that is still planned for the project.

2: Research

# 2.1 Introduction

# 2.2 Papers

# 2.3 Existing Projects

The most prevalent example found of proper monitoring of User Preferences is Google Now by Google.

# 2.4 Other Sources

Other than existing Academic Papers, I read a number of books about datamining and machine learning, as well as human-computer interaction. Many of the papers had mentioned the use of datamining for analysing the collected data, and further research was done into the possible techniques that could be used by the project.

The first book read was *Datamining: Practical Learning Tools and Techniques* by Witten, Frank, and Hall. This book detailed many of the popular datamining techniques and algorithms. It also contained numerous examples of the uses of these mining techniques in order to further explain when they are used. This was particularly useful for understanding these techniques before delving deeper into their uses.

After initialstudy of Datamining, *Machine Learning: A Probabilistic Perspective* by Kevin Patrick Murphy was consulted in order to further research possible methods of gathering meaningful and useful information from the collected data. Many of the papers mentioned using clustering and other machine learning techniques in order to mine the data and this book was used to further research these techniques. This was important for full understanding of the techniques as well as selection of the techniques used.

As the interface and user-interactability was a vital part of the project design, a number of user-interface books and guides were consulted. *Don’t Make Me Think: A Common Sense Approach to Web and Mobile Usability* by Steve Krug was a very short but enlightening book revolving around the importance of simplicity in design. The book itself was made to be short in order to exemplify good design and simplicity. Much of the book detailed around creating interfaces that are self-explanatory and allow for quick navigation and require little “thinking” in order to perform an action. This thought process was carefully preserved when designing the interface of the project.

*The Design of Everyday Things* by Don Norman was also selected in order to help understand the thought process behind many designs. This book delved into the psychology of everyday actions as well as understanding faults of bad design and how “Human Error” is often attributed to cases of faulty design. This book was important for understanding common pitfalls and constraints for the design of the program as well as techniques for the testing of the program interface.

3: Description of Current Progress

# 3.1 Introduction

As much of the project was focused on research, the current progress is limited. This is further constrained by the requirement of learning JavaScript.

# 3.2 Problems Faced

## Language

## Netflix

API

4: Project Plan

# 4.1 General Introduction

# 4.2 Testing