UNIVERSITY OF SOUTHAMPTON

A Context-Sensitive Relevance-Based Intelligent Data-Ranking Agent

by

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A project report submitted for the award of
MEng Electronic Engineering

in the
School of Electronics and Computer Science

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"Write a funny quote here."

If the quote is taken from someone, their name goes here

UNIVERSITY OF SOUTHAMPTON

Abstract

School of Electronics and Computer Science

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The Thesis Abstract is written here (and usually kept to just this page). The page is kept centered vertically so can expand into the blank space above the title too...

Acknowledgements

The acknowledgements and the people to thank go here, don't forget to include your project advisor...

Contents

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Abbreviations

LAH **L**ist **A**bbreviations **H**ere

Physical Constants

Speed of Light $c = 2.997\ 924\ 58 \times 10^8\ \mathrm{ms}^{-\mathrm{S}}$ (exact)

Symbols

a	distance	m
P	power	W (Js^{-1})
ω	angular frequency	$rads^{-1}$

For/Dedicated to/To my...

Chapter 1

Introduction

Context-sensitive techniques, data fusion and ranking agents are frequently used in industry applications and consumer software products. Combined, these techniques are useful for ranking social media according to a users preferences and context. This report describes an agent for the classifying, scoring and ranking of data according to its context-sensitive relevance to a user.

1.1 The Problem

Social media, productivity tools and internet-based information are abundant on mobile devices, leading to users being overwhelmed with information, despite only a small amount of it being of any interest to a particular individual at any given moment. This calls for a means by which such data can be ranked or filtered according to its importance, interest or relevance.

1.2 Project Objective

The objective of this project is to produce a scalable and highly modular context-sensitive mobile-content relevance-based intelligent ranking agent, to order social media, productivity and other web-based information according to its time- and situation-specific relevance to a user.

1.3 Goals

The following are core goals which this project sets out to achieve.

1. Develop a scoring algorithm by which to judge to relevance of an item of data based upon a users
   (a) Personality profile
   (b) Historical data such as click-history
   (c) Environment (conditional upon time-constraints)
2. To perform automatic remote topic analysis to judge the topic of an item of data
3. Develop a sorting/ranking algorithm to sort or insert scored items of data efficiently, into an ordered list
4. Develop a stable and robust data fusion technique to combine a range of data into a user-context and data-context object.
5. Abstract away this agent into an extensible Java API for use in
   (a) Smartphone apps (Android)
   (b) Web-apps (Spring MVC)
   (c) Desktop applications (Java Swing etc.)
6. To develop a consumer smart phone app to demonstrate the working API which automatically ranks a users data according to its relevance

These are the criteria by which the extent of this project's success will be evaluated.

1.4 Unique Features

Many of the aspects of this project have never been seen combined into a single research project before and others (such as query-less context-sensitive scoring of data) have recieved little attention. This project is unique in its endeavour to combine data fusion techniques with context-sensitive scoring in the development of a commercially viable prototype.

Chapter 2

Background Research

This is some sample text.

2.1 Existing Data-Ranking Implementations

This is some sample text.

2.1.1 Google Now

This is some sample text.

2.2 Data-mining

Outline: Facebook and Twitter API (phone, web and desktop), Android API, Android Calendar, Android Tasks, Android SMS, Android Sensors, Google Calendar and Tasks (web-based and desktop API).

2.3 Topic Analysis

This is some sample text.

2.4 Context-Sensitive Scoring Algorithms

This is some sample text.

2.5 Ranking Algorithms

Insertion sort etc.

Chapter 3

Specification

This is some sample text.

3.1 A Section

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3.1.1 A Subsection

This is some sample text.

3.2 Another Section

This is some sample text.

Chapter 4

Design Detail

This is some sample text.

4.1 Data Acquisition

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4.2 Scoring Algorithm

This is some sample text.

4.3 Ranking Algorithm

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Chapter 5

Planning and Progress

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5.1 A Section

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5.1.1 A Subsection

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5.2 Another Section

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Chapter 6

Testing Strategy and Results

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6.1 A Section

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6.1.1 A Subsection

This is some sample text.

6.2 Another Section

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Chapter 7

Critical Evaluation

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7.1 A Section

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7.1.1 A Subsection

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7.2 Another Section

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Chapter 8

Conclusion

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8.1 A Section

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8.1.1 A Subsection

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8.2 Another Section

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Chapter 9

Further Work

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9.1 A Section

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9.1.1 A Subsection

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9.2 Another Section

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Appendix A

An Appendix

This is an appendix.

Bibliography