

USEFul: A Framework to Mainstream Web Site Usability Through Automated Evaluation

Alexiei Dingli

*Intelligent Computer Systems
University of Malta
Msida, MSD 2080, Malta*

alexiei.dingli@um.edu.mt

Justin Mifsud

*Computing & Information Systems
Goldsmiths University of London
London, SE14 6NW, England, UK*

justinmifsud@gmail.com

Abstract

A paradox has been observed whereby web site usability is proven to be an essential element in a web site, yet at the same time there exist an abundance of web pages with poor usability. This discrepancy is the result of limitations that are currently preventing web developers in the commercial sector from producing usable web sites. In this paper we propose a framework whose objective is to alleviate this problem by automating certain aspects of the usability evaluation process. Mainstreaming comes as a result of automation, therefore enabling a non-expert in the field of usability to conduct the evaluation. This results in reducing the costs associated with such evaluation. Additionally, the framework allows the flexibility of adding, modifying or deleting guidelines without altering the code that references them since the guidelines and the code are two separate components. A comparison of the evaluation results carried out using the framework against published evaluations of web sites carried out by web site usability professionals reveals that the framework is able to automatically identify the majority of usability violations. Due to the consistency with which it evaluates, it identified additional guideline-related violations that were not identified by the human evaluators.

Keywords: Usability, Automated Usability Evaluation, Usability Guidelines, Usability Problems.

1. INTRODUCTION

The International Standards Organization's ISO9241 standard, defines usability as the "effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments" [1].

Whilst there exists a general agreement about the importance of web site usability, especially within the technical communication professional and the academic communities [2, 3, 4], it is given less priority in the commercial sector [3]. In fact, even in its early years, it was noted that on average, the web sites on the World Wide Web were of a poor quality [5, 6, 7, 8].

Problems related to poor usability and accessibility in software and web sites, also prompted some countries to also have their own guidelines and legislation for usability and accessibility of web sites [9, 10]. Additionally, there is less accord about what constitutes usability [2] particularly because some argue that usability is perceived in different ways by different users based on their characteristics such as age, gender, education level, technology skills and culture [11, 12].

Thus, it can be observed that a paradox exists whereby web site usability is proven to be an essential element in a web site, the absence of which confuses users and results in loss of revenue [13, 14] and at the same time it is not commonly applied with the commercial sector. The main question that this study aims to address is "How can web site usability be automated and as

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**Ajith Abraham,Pranab Kr. Muhuri,Azah
Kamilah Muda,Niketa Gandhi**

Useful A Framework To Mainstream Web Site Usability Through Automated Evaluation:

USEFul Justin Mifsud, 2012 Web site usability is an essential element in a web site nonetheless one can find an abundance of web pages with poor usability This discrepancy is the result of limitations that are currently preventing web developers in the commercial sector from producing usable web sites This work proposes a framework whose objective is to alleviate this problem by automating certain aspects of the usability evaluation process Mainstreaming comes as a result of automation therefore enabling non expert in the field of usability to conduct the evaluation This results in a reduction of the costs associated with such an evaluation whilst overcoming other limitations such as the need to engage usability experts and inconsistent evaluations Additionally the framework allows the flexibility of adding modifying or deleting guidelines without altering the code that references them A comparison of the evaluation results carried out using the framework against published evaluations of web sites carried out by web site usability experts reveals very encouraging results **Design**

Solutions for Improving Website Quality and Effectiveness Sreedhar, G., 2016-01-07 As the Internet has evolved to become an integral part of modern society the need for better quality assurance practices in web engineering has heightened Adherence to and improvement of current standards ensures that overall web usability and accessibility are at optimum efficiency **Design Solutions for Improving Website Quality and Effectiveness** is an authoritative reference source for the latest breakthroughs techniques and research based solutions for the overall improvement of the web designing process Featuring relevant coverage on the analytics metrics usage and security aspects of web environments this publication is ideally designed for reference use by engineers researchers graduate students and web designers interested in the enhancement of various types of websites **Transforming our World Through Design, Diversity and Education** Gerald

Craddock, Cormac Doran, Larry McNutt, Dónal Rice, 2018-10-15 Good design is enabling and each and every one of us is a designer Universal Design is widely recognized an important concept that should be incorporated in all person centred policies The United Nations Convention on the Rights of Persons with Disabilities UNCPRD clearly stipulates that the most effective way of delivering on the promise of an inclusive society is through a Universal Design approach Sitting at the intersection of the fields of Higher Education and Universal Design this book presents papers delivered at the Universal Design and Higher Education in Transformation Congress UDHEIT2018 held in Dublin Ireland from 30 October to 2 November 2018 This event brings together key experts from industry education and government and non government organization sectors to share experiences and knowledge with all participants The 86 papers included here are grouped under 17 headings or themes ranging from education and digital learning through healthcare to engagement with industry and urban design Celebrating and integrating all that is good in design diversity and education this book will be a valuable resource for all those interested in the inspiring and empowering developments in both Universal Design and higher education **Intelligent Systems Design and Applications** Ajith Abraham, Pranab Kr. Muhuri, Azah Kamilah Muda, Niketa

Gandhi,2018-03-21 This book highlights recent research on intelligent systems design and applications It presents 100 selected papers from the 17th International Conference on Intelligent Systems Design and Applications ISDA 2017 which was held in Delhi India from December 14 to 16 2017 The ISDA is a premier conference in the field of Computational Intelligence and brings together researchers engineers and practitioners whose work involves intelligent systems and their applications in industry and the real world Including contributions by authors from over 30 countries the book offers a valuable reference guide for all researchers students and practitioners in the fields of Computer Science and Engineering **App and Website**

Accessibility Developments and Compliance Strategies Akgül, Yakup,2021-08-13 In the present digital world the growing number of internet users has made web quality an important factor for accessing online services and increasing the customer base of an organization The advances in information technology and the internet have opened new dimensions in many different industries Currently accessibility research is an active area of research Specifically access for everyone regardless of disability has become an essential aspect of web development As webpages will be used by both nondisabled and disabled individuals web pages must be designed with a technical criterion that fits universal needs The ambition to make websites barrier free is not limited to standards and laws but has been on the agendas of all governments and public agencies recently and this universality of websites is a fundamental area of research App and Website Accessibility Developments and Compliance Strategies intends to provide theoretical and practical contributions for the accessibility of websites for both disabled and nondisabled individuals This book discusses how web quality parameters like usability and accessibility are being evaluated for their universal design and accessibility by different types of disabled individuals The chapters cover the current methodologies for evaluation accessible design criteria inclusive practices in web and app development and policies and interventions across different types of websites This book is ideally intended for web developers designers software engineers IT specialists social organizations governments practitioners researchers academicians and students in the usability and accessibility of websites for disabled individuals **Digital Transformation**

and Global Society Daniel A. Alexandrov,Alexander V. Boukhanovsky,Andrei V. Chugunov,Yury Kabanov,Olessia Koltsova,2017-11-08 This book constitutes the refereed proceedings of the Second International Conference on Digital Transformation and Global Society DTGS 2017 held in St Petersburg Russia in June 2017 The 34 revised full papers and three revised short papers presented were carefully reviewed and selected from 134 submissions The papers are organized in topical sections on eSociety social media analysis eSociety ICTs in education and science eSociety legal security and usability issues ePolity electronic governance and electronic participation ePolity politics of cyberspace eCity urban planning and smart cities eHealth ICTs in public health management eEconomy and eFinance finance and knowledge management

New Opportunities for Sentiment Analysis and Information Processing Sharaff, Aakanksha,Sinha, G. R.,Bhatia, Surbhi,2021-06-25 Multinational organizations have begun to realize that sentiment mining plays an important role for

decision making and market strategy The revolutionary growth of digital marketing not only changes the market game but also brings forth new opportunities for skilled professionals and expertise Currently the technologies are rapidly changing and artificial intelligence AI and machine learning are contributing as game changing technologies These are not only trending but are also increasingly popular among data scientists and data analysts New Opportunities for Sentiment Analysis and Information Processing provides interdisciplinary research in information retrieval and sentiment analysis including studies on extracting sentiments from textual data sentiment visualization based dimensionality reduction for multiple features and deep learning based multi domain sentiment extraction The book also optimizes techniques used for sentiment identification and examines applications of sentiment analysis and emotion detection Covering such topics as communication networks natural language processing and semantic analysis this book is essential for data scientists data analysts IT specialists scientists researchers academicians and students

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2021 Osvaldo Gervasi, Beniamino Murgante, Sanjay Misra, Chiara Garau, Ivan Blečić, David Taniar, Bernady O. Aduhan, Ana Maria A.C. Rocha, Eufemia Tarantino, Carmelo Maria Torre, 2021-09-10 The ten volume set LNCS 12949 12958 constitutes the proceedings of the 21st International Conference on Computational Science and Its Applications ICCSA 2021 which was held in Cagliari Italy during September 13 16 2021 The event was organized in a hybrid mode due to the Covid 19 pandemic The 466 full and 18 short papers presented in these proceedings were carefully reviewed and selected from 1588 submissions The books cover such topics as multicore architectures mobile and wireless security sensor networks open source software collaborative and social computing systems and tools cryptography human computer interaction software design engineering and others Part II of the set follows two general tracks geometric modeling graphics and visualization advanced and emerging applications Further sections include the proceedings of the workshops International Workshop on Advanced Transport Tools and Methods A2TM 2021 International Workshop on Advances in Artificial Intelligence Learning Technologies Blended Learning STEM Computational Thinking and Coding AAILT 2021 International Workshop on Advancements in Applied Machine learning and Data Analytics AAMDA 2021 At the end of the book there is a block of short papers The chapter Spatial justice models an exploratory analysis on fair distribution of opportunities is published open access under a CC BY license Creative Commons Attribution 4 0 International License div *Databases and Information Systems IX* G. Arnicans, V. Arnican, J. Borzovs, 2016-11-04 Databases and information systems are now indispensable for the day to day functioning of businesses and society This book presents 25 selected papers from those delivered at the 12th International Baltic Conference on Databases and Information Systems 2016 DB tools technologies and languages for model driven development decision support systems and data mining natural language processing and building linguistic components of information systems advanced systems and technologies related to information systems databases and information technologies in teaching and learning The book will be of interest to all those whose work involves the design

application and use of databases and information systems

Community Usability Engineering Torben

Wiedenhöfer, 2015-08-04 Torben Wiedenhöfer erweitert neben den im Usability Engineering intensiv betrachteten und unterstützten Softwareentwicklungsphasen Analyse Design und Implementierung diesen Diskurs durch die Adressierung der Nutzungsphase. Dies gelingt indem er Nutzern eine gestaltungsaktivere Rolle zuschreibt und gleichzeitig Entwicklern ermöglicht designbezogene Aufgaben in die Nutzungsphase zu übertragen. Diese Studie stellt entsprechende Werkzeuge und ein Vorgehensmodell vor die empirisch begründet und in der Praxis evaluiert wurden.

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