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Methodology for automating web usability and accessibility evaluation by guideline

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A Methodology for Automating Guideline Review of Web Sites

Abdo Beirekdar

Thesis submitted in fulfillment of the requirements for the degree of Doctor of Sciences
(Computer Science Option)

- August 30th, 2004 -

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**Institut d'Informatique
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**Facultés Universitaires
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Une Méthodologie pour Automatiser la Revue de Règles pour les Sites Web

Abdo Beirekdar

Thèse présentée en vue de l'obtention du grade de Docteur en Sciences
(Option Informatique)

- 30 Août 2004 -

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To my parents and to my wife

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Abstract

This work consists in proposing a methodology to improve automated evaluation of the ergonomic quality of web sites (with special focus on usability and accessibility) by static analysis of HTML code of their pages using the evaluation technique called guideline review.

This methodology will be articulated around:

- A **framework** that defines a systematic and consistent way for structuring guidelines in order to enable their automatic evaluation;
- A **guideline definition language** (GDL) able to express guideline information in a sufficiently rich manner to enable an evaluation engine to perform automated evaluation of any GDL-compliant guideline;
- **Tools** to support the proposed methodology. The tools are (1) a structuring tool (editor) to enable the specification and manipulation of guidelines structures (structured following the framework and expressed in a GDL-compliant form) and (2) an evaluation tool which uses the guidelines to conduct the evaluation of Web sites.

Keywords: Automatic evaluation, Web ergonomics, guideline review, usability, accessibility, guideline definition language, guideline formal structuring, evaluation tool.

Résumé

Ce travail propose une méthodologie pour améliorer l'évaluation automatisée de la qualité ergonomique des sites Web (avec une attention spécial sur l'utilisabilité et l'accessibilité) par analyse statique du code HTML de leurs pages en utilisant la technique d'évaluation appelée la revue de règles.

Cette méthodologie sera articulée autour:

- d'un **cadre méthodologique** qui définit une manière systématique et cohérente pour structurer les règles afin de permettre leur évaluation automatique;
- d'un **langage de définition de règles** (GDL) capable d'exprimer l'information de d'une règle de façon suffisamment riche pour permettre à un moteur d'évaluation d'exécuter une évaluation automatisée de n'importe quelle règle compatible GDL;
- D'**outils** pour supporter la méthodologie proposée. Les outils sont (1) un outil de structuration (éditeur) pour permettre la spécification et la manipulation des structures de règles (structurées selon le cadre et exprimées sous une forme compatible GDL) et (2) un outil d'évaluation qui emploie les règles pour effectuer l'évaluation des sites Web.

Mots-clés: Évaluation automatique, ergonomie du Web, revue de règles, utilisabilité, accessibilité, langage de définition de règles, structuration formelle de règles, outil d'évaluation.

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