Human-centered Intelligent User Interfaces

MAI648

Group Project

Analysis, Design and Development of a Prototype Intelligent User Interface

Description

In this group project, you are asked to analyze, design and develop a prototype intelligent user interface-based system on a theme of your choice. Examples include an adaptive interactive system, conversational interactive system, explainable user interface, intelligent security system, etc. Successful completion of the project requires following a user-centered design approach aiming to create a usable intelligent interactive system prototype.

Deliverables

Part A. Analysis Report

Please prepare a report including the following sections:

1. **Idea and Conceptual Design.** Describe the system you have chosen to design, why such a system is needed, what users' needs it aims to meet.
2. **Target Groups.** Identify the target groups of your system**.**
3. **Needs and Verification Analysis.** Initially conduct a short literature review on relevant works to your system. Then prepare a questionnaire, which you will distribute to stakeholder users of the system to be designed. The questionnaires will consist of relevant questions so that you can determine the needs of the users and the system you are designing. You may supplement your data with interviews and/or focus groups.
4. **Personas and Scenarios.** Create personas for each target group of users you have identified. Create scenarios in which you describe typical activities to be performed by the users of your system.
5. **Tasks.** Describe three examples of main tasks of the system. Try to keep the description of the tasks short and concise. Each task should be accompanied by a paragraph describing the target user group, the frequency with which the task is performed.
6. **Requirements.** Based on the abovementioned analysis, identify the main requirements of the system, and categorize them as follows: *i)* highly necessary to be included; *ii)* must be included; *iii)* can be included; *iv)* should not be included. Also provide a short justification.

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Part B. Prototype Design and Implementation

This part is intended to complete the design and development of the system based on the analysis conducted in part A. Tasks in this part include the design and development of a prototype system using a prototyping and/or development tool of your choice. You are free to select whichever tool you prefer. Some implementation ideas and tools are suggested below.

Implementation ideas

Conversational and Voice UI: Implement an intelligent voice assistant with Amazon Alexa Platform, or other platforms, such as, Google Assistant, Apple Siri, etc.

Web-based Intelligent and Adaptive UI: Design and develop prototypes with a prototyping software of your choice (*e.g.*, Just in mind, InVision, Protoio etc.) or software design and development software of your choice (*e.g.*, Visual Studio, Android Studio, Xcode, etc.).

Intelligent User Modeling: You may implement an AI-based modeling mechanism as part of a larger system. For example, you may implement a Python-based solution using open-source libraries taught throughout the course.

Include screenshots and short description of your prototype designs in a report supplementing the source code and files of the system.

Part C. Final Project Presentations

At the end of the semester, each group will make a short presentation of their project by providing a brief description of the system and the prototypes designed and implemented as part of Part A and Part B. The presentations will be organized in PowerPoint-like presentations and should be conducted by all group members. The presentations should be planned to take 20 minutes.

Submission Guidelines

Please submit the abovementioned deliverables to the relevant submission link in the E-Class system of our course as follows:

- *Part A – Analysis:* Report (in .PDF)
- *Part B – Design and Development:* Source code/prototype designs and supplementary report (in .PDF)
- *Part C – Presentations:* 20% (PowerPoint-like presentations, *e.g.*, .PPTX)

Assessment

This assignment has a 25% weight on the overall grade in this course. Within the assignment, each part has the following weighting:

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- *Part A – Analysis:* 40%
- *Part B – Design and Development:* 45%
- *Part C – Presentations:* 15%

Important Dates

Project Announcement: Week 1 – 07/09/2022

Formation of Groups: Week 3 – 21/09/2022

Discuss and Fine-tune Idea and Concept with Instructor: Week 5 – 05/10/2022

Mid-term Instructor Feedback: Week 7 – 19/10/2022

Project Submission Deadline and Final Project Presentations: Week 13 – **30/11/2022**

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