**Group Project Human-Computer Interaction**

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Human-Computer Interactions (HCI) take many forms. From the early days when interaction involved punch cards or switches to modern virtual reality or conversational interaction, there are many ways to interact with computers. Artificial Intelligence has greatly impacted all elements of computer science, including HCI. This project enables students to pursue HCI and AI with chatbots or conversational agents. This document discusses the structure of this project and discusses in detail each sub-element.

# Project Structure

The project is made up of five assignments. The first step is to create a proposal. This document outlines the type of application that will be created. Next, the group will create a design document outlining how the elements will be, or were, constructed. Next, the source code will be published to an instructor-accessible git repository and submitted as an archive file (zip). The overall results of the project are documented in a result paper, which in turn is used to create a presentation.

A good starting point is to search using queries like “huggingface chatbot gradio” or “RAG python huggingface chatbot”. An example is: <https://www.kdnuggets.com/2023/06/build-ai-chatbot-5-minutes-hugging-face-gradio.html>

Avoid solutions which rely on OpenAI and associated tokens. Keep the project simple and attainable. You should scope the project such that it can be completed using free resources, such as Hugging Face’s spaces or Google’s Colaboratory. Additionally, the projects being attempted should be able to be executed locally on a typical laptop.

# Group Project Proposal

There are many alternatives to this assignment. Several options include creating a large language model (LLM) chatbot, demonstrating retrieval augmented generation (RAG), or related technology. The guiding principle should be that the project addresses interaction with a computer involving an AI-based mechanism. Include within the proposal where the project will be constructed, how it will be versioned, and what software libraries and tools will be used. For example, a group might choose to use a HuggingFace space with code written in Python and leverage HuggingFace’s version control system. Additionally, the group should specify which model(s) will be utilized, or a list of candidate models. A project proposal of one to two pages of content would be a reasonable submission.

# Group Project Design Documentation

Once the proposal is submitted and approved, the next step is to begin the design phase. This design should be relatively simple, given the time limitations of the project. It is acceptable to leverage elements of the proposal within the design to establish context. The design should include inputs to the system and the corresponding outputs—the real-world problem the project addresses should be included, along with any anticipated limitations. A design document of three to five pages would be a reasonable submission for the design documentation.

# Group Project Source Code

All source code written or reused by the group should be included in the submission. Ensure you credit the original source of all source code being reused. It is acceptable to utilize a blog post and similar documents for this project – provided the initial implementation is extended in a clearly documented way. Make a note if the source code does not execute. This does not mean a failing grade will be assigned. Include a description of the challenges faced, along with proposing possible causes. The amount of source codes submitted will differ greatly, depending on the type of project and the amount of reused code.

# Group Project Results

Create a document of five to seven pages that documents the overall experience of the group. Include challenges encountered along with mitigation strategies utilized. The goal is to document and demonstrate the things learned by doing this project. It is acceptable to reuse portions of the proposal and the design document within reason. In a positive way, discuss the group dynamic. Ensure you discuss the context of the project (what problem it is trying to address), along with the proposed solution. Discuss the technologies utilized and provide references for additional learning. It is acceptable to have each group member document their experiences if that is desirable.

# Group Project Presentation

In a presentation that is at most 20 slides, succinctly present the information from the Group Project Results. Include the problem being addressed, technologies used, and a discussion of the experience. What went well? What could have gone better?

# Conclusion

This document outlines the elements of the Human-Computer Interaction Group Project. If you have questions about this assignment, please ask your instructor.