**Intelligent Interactive System - Final Design Project Instructions**

**General instructions for the project:**

In this project you'll create an original human-AI interaction system on your own. You can pick any kind of system that you like, e.g., recommender systems, creativity support system, decision-support system, etc.. You'll work in teams of two people.

NOTE: if you’d like to do a research project instead, read instructions here:

<https://docs.google.com/document/d/1-t2SGLNd9LWitxd_AABuo3F2B5oTZ9-SQ8uBNJHWXgk/edit?usp=sharing>

The project will include several milestones:

* Project proposal
* Prototype
* Final report
* Final presentation

### Guidelines for project ideas

Projects are open-ended, so please be creative. But here are some requirements:

* Your project should have a real AI technique running in the background.
* Your project should have some user interface. We expect most projects to be a novel human-AI interaction system that people can interact with. To create the interface, you can either build a simple web-based tool (e.g., host on [github pages](https://pages.github.com/)), or make an interactive interface in a jupyter notebook (more on how you can do this [here](https://towardsdatascience.com/bring-your-jupyter-notebook-to-life-with-interactive-widgets-bc12e03f0916)).
* Your prototype doesn't need to be a fully implemented platform, meaning that it needs to focus on the core human-AI interaction concept you're introducing, rather than to build all the database backend, login, etc.

Examples of human-AI systems:

* [Google What-If Tool](https://pair-code.github.io/what-if-tool/demos/uci.html)
* [Using Artificial Intelligence to Combat Misinformation about COVID-19](https://www.newvoicesnasem.org/post/using-artificial-intelligence-to-combat-misinformation-about-covid-19)
* [Google Quick, Draw!](https://quickdraw.withgoogle.com/)

### Milestone 1: project proposal (deadline: 8/12/22)

Your first task is to identify a problem that you’d like to tackle and brainstorm approaches to solving it. Your proposal should include the following sections:

* **Problem and motivation** - what is the problem you chose? Why is it interesting/important?
* **System objectives** - specify the tasks that your system should support (these do not have to be finalized at this point, but you should have some ideas)
* **Existing technology review** - briefly describe whether there are tools that are similar to the technology you are suggesting, how your system would differ, and what inspiration you can take from existing tools
* **Approach** - describe how you plan to achieve your objectives. Specifically, what are the core interactions you are considering, and what algorithmic approaches are you considering (these do not have to be finalized at this point, but you should have some ideas)
* **Plan** - write your plan for implementing the project. What are your main tasks and when will you do them.

Your proposal should be ~2 pages long

### Milestone 2: design an interface prototype, start exploring algorithmic approaches (deadline: 1/1/23)

For this milestone you will complete two main tasks:

1. Design an initial mockup of your system. You can create your mockup on paper, using figma, powerpoint or any other tool you’d like. The mockup should show at least three distinct user tasks that your system aims to support, and show the steps that will happen from initiating the task to finishing it.
2. Give more thought to your backend algorithmic approach. You should explore existing approaches and code libraries that you could utilize for your project

For this milestone you should submit your mockup, and a report explaining it. The report should include the following:

* **Project Summary** (one paragraph): (1) the problem you're addressing, (2) what your solution is, (3) what unique approach you're taking in your solution (how it's different from other similar solutions).
* **Design principles**: What guided you in your design? You can refer to the guidelines for human-AI interaction for ideas: [AI Design guidelines\_CARDS\_1](https://www.microsoft.com/en-us/haxtoolkit/uploads/prod/2021/05/AI-Design-guidelines_041519.pdf)
* **Interface instruction**: Give a quick tour of the interface prototype, and also show off some of the highlights of the interface. Include a short video demonstrating your prototype.
* **Algorithmic approach**: describe the approaches you are considering, available libraries and tools, and how you will build on these to implement your system

Resources:

* Example of paper prototype: <https://www.youtube.com/watch?v=y20E3qBmHpg>
* Tools for prototyping: Figma: <https://www.figma.com/>, Balsamiq: <https://balsamiq.com/>
* Guidelines for human-AI interaction: tutorial: [AI Design guidelines\_CARDS\_1](https://www.microsoft.com/en-us/haxtoolkit/uploads/prod/2021/05/AI-Design-guidelines_041519.pdf), paper: [Guidelines for Human-AI Interaction](https://www.microsoft.com/en-us/research/uploads/prod/2019/01/Guidelines-for-Human-AI-Interaction-camera-ready.pdf)

**Submission:** Reports should be submitted on Moodle. The report should include a link to a video demonstrating your prototype. Write your names and ID numbers in the file. Only one team member should submit the document.

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### Milestone 3: Final presentation (will be presented in class, more information later)

You will need to prepare a 5-minute presentation explaining your project. The presentation should discuss:

* Problem and motivation
* Approach
* Show prototype (at whatever readiness stage)

### Milestone 4: Final prototype and evaluation (deadline: 26/1/23)

This milestone will conclude your project. You should have a functional prototype of the key tasks your system supports.

Your final report should include the following sections:

* **Project Summary** (one paragraph, can be the same as in milestone 2): (1) the problem you're addressing, (2) what your solution is, (3) what unique approach you're taking in your solution (how it's different from other similar solutions).
* **System description**:
  + Provide a link to your working prototype. The link should remain functional until we grade the project.
  + Interface - explain the core components of the interface, the main tasks it supports, and discuss how it addresses the guidelines for human-AI interaction (refer to at least 3 of the guidelines)
  + Algorithms - describe the backend of your system. Clearly explain the algorithms you used and how they work
* **Minimal user evaluation**: have at least 5 people try to use your system. Describe how they worked with the system, and what you learned from their interaction (what worked well, what didn’t work well).
* **Summary**: write a short summary describing what you learned from the project, and how you would have extended it given more time (could be improvements both to the UI and to the algorithms).

**Submission:** Reports should be submitted on Moodle. The report should include a link to your system, and should remain available until we grade the projects. Write your names and ID numbers in the file. Only one team member should submit the document.