[**PROJ-HCI**](https://drive.google.com/drive/folders/18Sn_cSs4xBo3gzxe4W7Rs4BGeimV1YZ5?usp=drive_link)

Human-Computer Interaction (HCI) is the study of how people interact with computers and digital systems, focusing on improving user experience and usability. It involves designing interfaces that are intuitive and accessible, considering factors like ergonomics, cognitive load, and human behavior. HCI combines elements from computer science, psychology, design, and engineering to create technology that meets user needs effectively.

**EXTRA INFO**

* [**https://www.interaction-design.org/literature/topics/human-computer-interaction**](https://www.interaction-design.org/literature/topics/human-computer-interaction)
* [**https://www.spiceworks.com/tech/artificial-intelligence/articles/what-is-hci/**](https://www.spiceworks.com/tech/artificial-intelligence/articles/what-is-hci/)
* [**https://www.simplilearn.com/what-is-human-computer-interaction-article**](https://www.simplilearn.com/what-is-human-computer-interaction-article)

**LEARN**

* [**https://www.figma.com/resource-library/design-basics/**](https://www.figma.com/resource-library/design-basics/)
* [**https://www.designsystems.com/**](https://www.designsystems.com/)

**IDEAS IN DIFFERENT DOMAINS**

* [**https://www.behance.net/search/projects/human%20computer%20interaction**](https://www.behance.net/search/projects/human%20computer%20interaction)
* [**https://www.behance.net/search/projects/HCI**](https://www.behance.net/search/projects/HCI)
* [**https://cis.unimelb.edu.au/hci/projects**](https://cis.unimelb.edu.au/hci/projects)
* [**https://www.inf.uni-hamburg.de/en/inst/ab/hci/projects.html**](https://www.inf.uni-hamburg.de/en/inst/ab/hci/projects.html)
* [**https://cambum.net/HCI2012/HCI2012SP.htm**](https://cambum.net/HCI2012/HCI2012SP.htm)

**CASE STUDY OPEN SOURCE**

* [**https://github.com/himanshuajmera/HCI-Projects**](https://github.com/himanshuajmera/HCI-Projects)
* [**https://github.com/topics/human-computer-interaction?utf8=%E2%9C%93**](https://github.com/topics/human-computer-interaction?utf8=%E2%9C%93)

**HCI Project Pipeline**

1. **Understanding the Context of Use**

* **Identify Users**:
  + Create user profiles detailing demographics, skills, and behaviors.
  + Segment users into different groups to tailor design approaches.
* **Understand Tasks**:
  + Perform task analysis to break down user tasks into specific goals and actions.
  + Use techniques like Hierarchical Task Analysis (HTA) for clarity.
* **Identify Environment**:
  + Analyze the physical (location, equipment) and social contexts (team dynamics, cultural factors) in which the system will be used.

2. **Requirements Gathering**

* **Conduct User Studies**:
  + Use interviews, focus groups, and surveys to understand user needs and preferences.
  + Observe users in their natural environments for contextual insights.
* **Perform Task Analysis**:
  + Identify key tasks users perform and any challenges they face.
  + Create user scenarios to illustrate typical interactions.
* **Review Existing Solutions**:
  + Analyze competitor systems for their strengths, weaknesses, and user feedback.

3. **Design**

* **Conceptual Design**:
  + Brainstorm and sketch initial design ideas for functionality and layout.
  + Define the overall architecture and flow of information.
* **Interaction Design**:
  + Specify how users will interact with the system (navigation, controls, feedback).
  + Create user flows and wireframes to outline the user experience.
* **Prototyping**:
  + Develop low-fidelity prototypes (e.g., paper mockups) for initial testing.
  + Create high-fidelity prototypes (e.g., using Figma or Adobe XD) for more detailed evaluations.

4. **Evaluation**

* **Usability Testing**:
  + Conduct tests with real users to observe their interactions and gather qualitative and quantitative feedback.
  + Use scenarios to simulate realistic tasks during testing.
* **Iterative Design**:
  + Analyze usability test results, identify issues, and prioritize fixes.
  + Refine the design iteratively, conducting further tests as needed.
* **Heuristic Evaluation**:
  + Perform expert reviews using usability heuristics (e.g., Nielsen’s principles) to identify potential design flaws.

5. **Implementation**

* **Development Planning**:
  + Collaborate with developers to create a feasibility plan for design implementation.
  + Establish a timeline and milestones for the development process.
* **Iterative Development**:
  + Adopt agile methodologies to allow for ongoing user feedback and adjustments during development.

6. **Post-Implementation Evaluation**

* **Collect User Feedback**:
  + Use surveys, interviews, and analytics to gather insights from users after launch.
  + Monitor user engagement and satisfaction through metrics.
* **Long-term Usability Testing**:
  + Conduct follow-up

**Recommendations for Design Process Based on HCI Principles:**

* **User-Centric Approach:** Prioritize understanding the users, their needs, tasks, and context throughout the design process. Involve users in early stages through interviews, observations, and usability testing.
* **Iterative Design:** Embrace an iterative approach, where design, testing, and refinement occur in cycles. This allows for continuous improvement based on user feedback and evolving requirements.
* **Collaboration:** Foster collaboration between designers, developers, and stakeholders to ensure a shared understanding of user needs and technical feasibility.
* **Accessibility:** Design for inclusivity by considering users with diverse abilities and backgrounds. Adhere to accessibility guidelines and standards.
* **Usability Testing:** Conduct thorough usability testing with representative users at various stages of the design process. Use both qualitative and quantitative methods to gather feedback.
* **Heuristic Evaluation:** Supplement usability testing with expert reviews using established usability heuristics to identify potential issues early on.
* **Prototyping:** Utilize prototypes (low-fidelity and high-fidelity) to visualize and test design concepts before full implementation.
* **Flexibility and Adaptability:** Design systems that can accommodate changes in user needs, technology, and context over time.
* **Aesthetics and User Experience:** Balance aesthetics with usability and functionality to create a positive and engaging user experience.
* **Ethical Considerations:** Address ethical implications throughout the design process, considering privacy, security, and potential biases.

Thanks

Karim Mansor