Master's Thesis Proposal
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Title: Evaluating the Efficacy of LLM-Generated UI Modules for Personalized Learning Dashboards

Executive Summary: In this thesis, I want to explore how Large Language Models (LLMs) can be used to dynamically generate personalized user interface (UI) components for learning dashboards. The idea is to see if these AI-generated modules actually improve the user experience compared to traditional, static dashboard elements.
With support from Digital Ops and their platform Strive AI, I'll build and test two types of modules: one traditionally designed, and another generated through LLMs. Then, by conducting a user study, I'll evaluate their effectiveness based on real user interaction and feedback. The goal is to come up with practical design insights that could help shape future educational dashboards.

Problem Statement: Many of today's learning dashboards are built in a static and uniform way — same layout, same content, same structure for every user. But learners have different goals, behaviors, and needs. When the interface doesn't adapt, the experience becomes less effective. I believe that LLMs offer a new way to make dashboard components smarter and more dynamic, adjusting based on user activity and context. However, there's still a lack of proper research showing how well this works in practice, especially in real-world learning tools.

Research Questions:
Main Research Question:
How does the performance and user experience of LLM-generated UI modules compare to traditionally designed static modules in learning dashboards?
Sub-questions:

- **RQ1: Usability & Trust**
  How do users experience and trust the LLM-generated UI modules? Do they find them usable, helpful, and personalized?
- **RQ2: Engagement & Behavior**
  Do dynamic modules affect how users engage with their goals and interact with the dashboard?
- **RQ3: Design & Implementation**
  What are the practical and technical challenges of using LLMs to build dashboard UIs?

Methodology:
Phase 1: Design & Implementation

- Module A (Static): Built using conventional UI patterns. Same layout and content for all users.
- Module B (LLM-Generated): Uses LLMs to generate personalized content, summaries, and visuals based on the user's goals and behavior.

Both modules will be built and tested within the Strive AI platform, with backend support from Digital Ops.
Phase 2: User Study

- Participants: Around 16–20 users
- Setup:
  - Group A will use the static module
  - Group B will use the LLM-based module
  - Both groups will perform the same tasks (e.g., checking progress, setting goals)

Phase 3: Data Collection & Analysis

- Quantitative:
    - Task completion time
    - System Usability Scale (SUS)
    - Interaction data (clicks, time on task, goal completions)
- Qualitative:
    - Post-task surveys
    - Semi-structured interviews for deeper user feedback

Research Timeline

Month	Activities
Month 1	**Setup, onboarding, access to Strive AI systems**
Month 2–3	**UI module design and technical implementation**
Month 4	**User study execution**
Month 5	**Data analysis (qualitative + quantitative)**
Month 6	**Final writing, design guidelines, thesis defense**

Collaboration with Digital Ops & Strive AI:
Strive AI is an intelligent goal-tracking platform that makes use of data from different sources like screenshots, files, calendars, and more. It also provides dynamic dashboards based on user input. This makes it a perfect testbed for experimenting with AI-generated UI components.
Some features that will support my research:

1. Data Collection – Multiple input types are already integrated
2. Dynamic Visualization – Real-time dashboards respond to user data
3. Modular UI – Makes it easier to plug in experimental modules
4. Goal AI – Automatically helps users adjust and prioritize goals
5. Gamification – Users can interact socially through AI-reviewed challenges

Expected Outcomes:

- Data-Backed Insights – A comparison between static vs. LLM-generated UIs using real user data
- Design Guidelines – A practical set of recommendations for future personalized dashboards
- Working Prototype – A fully tested dashboard experience inside Strive AI
- Academic and Practical Value – Insights relevant to HCI, UX, and AI in education

Final Note:
I'm really excited about this project and the opportunity to work on something that blends AI, design, and real-world learning systems. I believe your expertise in user experience and learning technologies would help take this research in the right direction.

Any suggestions or ideas you might have — whether on the research design, tools, or overall scope — are most welcome. I'd be happy to revise and adapt the project based on your feedback.