Comparing custom ChatGPTs vs ChatGPT models to improve development efficiency and quality.

Liam Bonello
Institute of Information & Communication Technology
Malta College or Arts, Science & Technology
Liam Bonello
Paola PLA 9032
{liam.bonello.e22495@mcast.edu.mt}@mcast.edu.mt

***Abstract*—General Artificial Intelligence (GAI) and conversational AI models like ChatGPT are changing the ways of development. This review explores how custom GPTs are transforming the process by automating repetitive tasks, creating compelling content, and offering valuable insights into user behaviour. Böhm and Graser's AI-driven mobile application prototyping framework reveals how AI can enhance design with indirect guidance, plugins, and integrated tools. When it comes to web development, analysing AI generated code shows that ChatGPT can simplify coding tasks and boost productivity. In UI/UX design, integrating ChatGPT speeds up repetitive work, nurtures creativity, and smooths out workflows so designers can focus on the more artistic aspects. Comparing AI tools in GUI development in automation and creativity, AI's predictive power in web design helps developers anticipate user behaviour and cut down on lengthy testing. To see how custom GPT models stack up against standard versions, we built our own GPT and tested it alongside ChatGPT 3.5 and ChatGPT 4. By using a consistent set of prompts across all three models. Custom GPTs stood out with more accurate answers, deeper insights, and better technological integration. We started our research by defining goals and identifying relevant questions, then reviewed existing literature to guide our work. After collecting data, we set up the technical infrastructure and crafted special prompts to interact with all three models. Analyzing the results revealed how well the custom GPT performed.**

I. Introduction

General Artificial Intelligence (GAI) and conversational AI models like ChatGPT, web development and design are transforming at a remarkable pace. Tools that once required long hours of manual work are now becoming more efficent through intelligent guidance. This paper explores how custom GPT models can be refined to offer assistance in automating repetitive tasks, generating content, and understanding user behaviour compared to ChatGPT 3.5 and ChatGPT 4.

The motivation of this study comes from the desire to build more efficient tools that elevate creativity and productivity for designers and developers alike. By simplifying coding tasks and anticipating user behaviour more accurately, custom GPT models can unlock new levels of efficiency and creativity while delivering user-focused digital experiences.

The main goal is to compare the performance of custom GPT models to standard versions in UI/UX design and web development. We believe that custom GPTs will outperform standard models by providing more accurate answers, deeper insights, and better integration with current technological needs. This research seeks to answer a few key questions: 1. How does the performance of custom GPT models compare to standard models when asked the same prompts across various design and development tasks? 2. What strengths and weaknesses do custom GPT models have compared to standard models in UI/UX design and web development? 3. How can custom GPT models be further optimized to tackle the unique challenges of web development and design?

II. Literature Review

AI modules such as ChatGPT has improved the development and design sector. AI Chatbots purpose are to automate repetitive tasks, help with content creation, and analyze user behaviour to eventually revolutionize the field [**?**], [**?**]. This review aims to prove that AI specifically custom Chat Gpt's can improve design and development better than other versions of ChatGPT'S. The arrival of new technologies like GAI (General Artificial Intelligence) improved the web development and design technologies in doing repetitive jobs, producing content that is inspiring and analysing the activities of visitors. This selection is devoted to determining if the reception of AI in software development influences methodology and consequently the whole field.

1) **AI driven Mobile App Prototyping** Böhm and Graser [**?**] steps into AI in mobile application prototyping, highlighting the list enhancing design processes caused by AI. The study categorizes AI integration into indirect guidance, AI plugins, and integrated solutions, offering a conceptual framework for understanding AI's application in prototyping. Despite the lack of empirical data, the paper underscores the dynamic nature of technology and its potential to revolutionize application development, calling for rigorous empirical investigations to validate these conceptual insights.

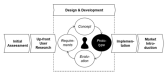

Fig. 1. Simplified User Centered Design Process

2) **The Impact of AI Generated Code on Web Development** Based on the efficiency analysis of AI generated code, this study underscores the advantages of using ChatGPT for automated coding in web development. By comparing ChatGPT's outcomes with traditional coding practices it shows improvements in speed, quality, and simplicity of coding tasks [**?**]. The employment of the Goal Question Metric (GQM) method for evaluation further shows the importance of quantitative metrics in assessing the impact of AI, with recommendations pointing towards enhancing AI's adaptability across various environments. This research also goes over the potential of AI in refining development processes. The integration of AI in coding does not only increase efficiency but also precision and innovation that was deemed unachievable. Particularly, the emergence of AI generated code, as seen with tools like Copilot, has shown an increase in productivity. These tools offer code suggestions from natural language descriptions, effectively reducing the burden on developers. This breakthrough has the potential to make programming more accessible, especially for beginners, by simplifying complex coding tasks of web development and removing repetitive code that is generic for all applications and websites.
3) **Exploring ChatGPT's Integration into UX Design** Integrating ChatGPT specifically custom GPT's into the UX design process assists in speeding up the process when it comes to the generation of repetitive tasks and prototyping. This approach leverages AI to enrich the creative process, enabling UX designers to obtain qualitative feedback that highlights ChatGPT's efficiency in design creation and workflow optimization. Despite the recognized gaps between artificial intelligence and the capabilities of human creativity, the findings from this exploration endorse a symbiotic future. AI tools are seen not as replacements but as tools that can assist in the designing process, facilitating a richer evolution of design methodologies rather than supplanting traditional methods. This perspective is substantiated by the emerging evidence that ChatGPT can streamline the initial stages of design thinking, from ideas to prototype refinement, by offering a wide area of design suggestions and automating routine tasks. This integration stands as a promising model where AI's analytical and human creativity converge, enhancing the overall design quality and efficiency [**?**]. The collaboration between human designers and AI tools highlights a future approach to UX design, promising an enhanced capacity for innovation and a more intuitive design workflow.
4) **Comparative Analysis of AI Tools in GUI Development** An analysis of design tools like Figma helps to reveal the changes in the modern GUI area. The report discusses the automation of design processes by AI and comes up with some reasons for doing this, saying that it is another part of the growing AI based design methods. [**?**] Finally, using thematic analysis and A/B testing as methodologies for exploration, this research paper goes into the effects of AI integration on creativity during the design process and suggests the need to conduct further empirical studies to confirm the practicality of AI's promises.
5) **AI's Predictive Power in Early Stage Web Design** In the world of web design, the early adoption of AI aims to determine whether it can accurately anticipate user behaviour and data science with design fundamentals [**?**]. This innovative approach employs AI models trained to predict user interactions, showcasing a significant leap towards data driven design decision-making. Such predictive capabilities suggest a future where extensive user testing might no longer be as critical, thanks to AI's ability to forecast user engagement and preferences accurately. This synergy of AI with design principles not only optimizes the design process but also paves the way for more intuitive and user centric digital environments, ultimately enhancing the user experience by grounding design decisions in predictive data analysis.
6) **Synthesis and Comparative Insights** The reviewed literature collectively signals a rapidly growing interest in using AI to enhance web development and design processes. While promising, it is apparent that AI is still in the very early stages of integration. Likely, it is already possible to gain efficiency with AI and to try out new creative design approaches. The depth to which AI can be practically integrated into these processes, however, remains largely uncharted territory and is something that needs to be empirically investigated.

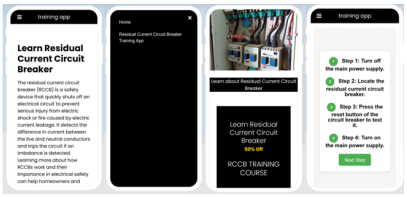

Fig. 2. Generative design using ChatGPT integration

With the integration of custom ChatGPTS in web development and design, we are entering a new era of digital innovation. This era is characterized by the potential to significantly enhance production efficiency and creativity while placing a stronger emphasis on user centric design. However, achieving this potential requires overcoming challenges related to the accuracy of AI generated outputs, ethical considerations in AI use, and the practical implementation of these technologies. Future research directions should focus on empirical studies that validate the effectiveness of AI in web development and design, ensuring that AI not only supports but also potentially guides both production and design processes towards creating more intuitive, engaging, and user focused digital experiences.

III. Research Methodology

To better understand how custom GPT models perform in UI/UX design and development compared to standard versions, we developed our own GPT and put it to the test alongside ChatGPT 3.5 and ChatGPT 4. In the table below, you'll see the questions we asked all three models, along with the responses we received. This side-by-side comparison will give you a clear picture of how each model handles similar tasks and which one is best suited for UI/UX challenges.

TABLE I
Comparing GPT's Answers

Prompts	ChatGPT 3.5 Response	ChatGPT 4 Response	Custom GPT Response
How do you handle errors or inconsistencies in the data provided for generating designs?	Relatively time-consuming and less efficient when needed to be quick	More time-consuming and less efficient suggestion	More efficient and timeless suggestion
Can you explain the difference between UI and UX design?	Clarity response is high, Depth moderate, Relevance moderate, technological integration low	Clarity response is high, Depth high, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration high
What are the key principles of effective user interface design?	Clarity response is high, Depth moderate, Relevance high, technological integration low	Clarity response is high, Depth high, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration high
How would you incorporate a minimalist design in a website UI?	Clarity response is high, Depth moderate, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration high
How can I make my website accessible to people with visual impairments?	Clarity response is high, Depth moderate, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration high
How can I use GPT with Figma to automate design tasks?	Clarity response is high, Depth low, Relevance moderate, technological integration low	Clarity response is high, Depth high, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration high
What types of interactions enhance user engagement on educational platforms?	Clarity response is high, Depth moderate, Relevance high, technological integration moderate	Clarity response is high, Depth high, Relevance high, technological integration high	Clarity response is high, Depth high, Relevance high, technological integration high

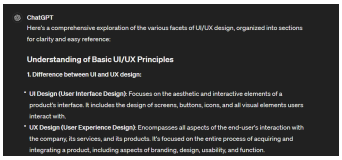

Fig. 6. ChatGPT 4 answer for prompt 2

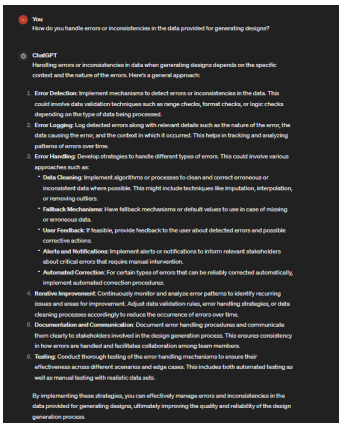

Fig. 3. ChatGPT 3.5 Answer for prompt 1

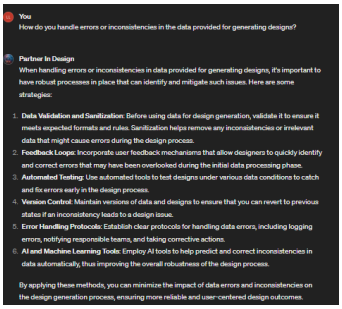

Fig. 4. CustomGPT answer for prompt 1

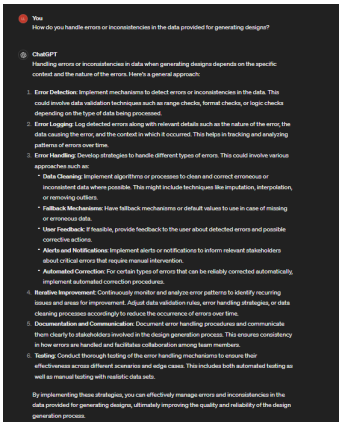

Fig. 5. ChatGPT 3.5 Answer for prompt 2

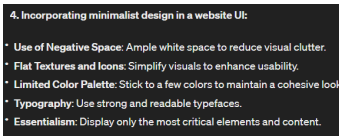

Fig. 9. Chat GPT 4 answer for prompt 4

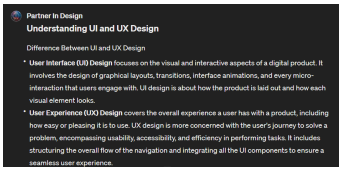

Fig. 7. CustomGPT answer for prompt 2

Fig. 8. ChatGPT 3.5 Answer for prompt 4

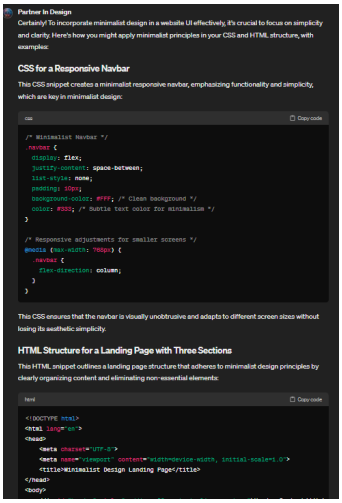

Fig. 10. Custom GPT answer for prompt 4

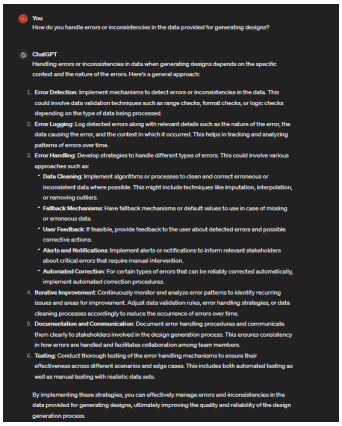

Fig. 11. ChatGPT 3.5 Answer for prompt 4

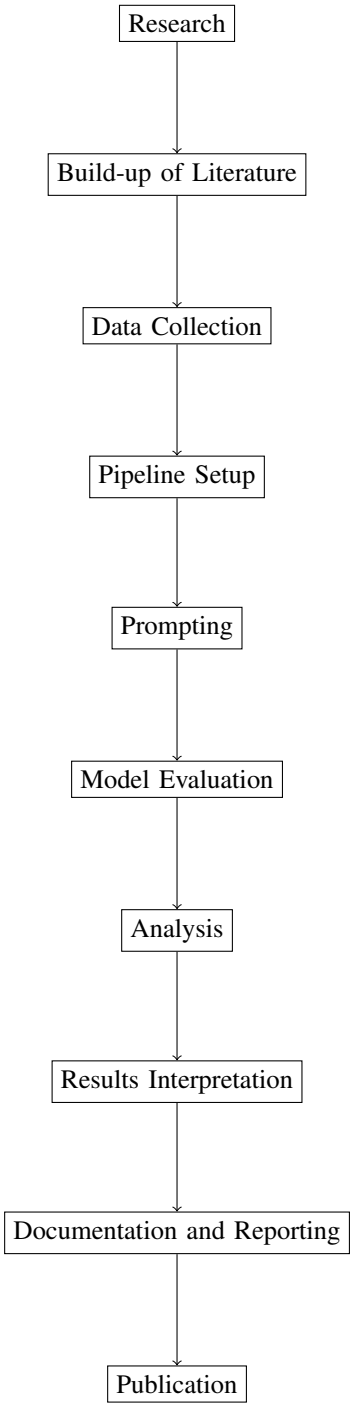

Fig. 12. Pipeline

The pipeline outlines a path for carrying out AI research. It starts by pointing out the main questions and setting goals. Next review existing studies to support the project. Data is then gathered as needed and everything is set up technically to handle and analyze data. Special prompts are used to interact with the custom GPT and Ready made models GPT to generate useful results. These models are then tested to see how well they perform. After that, the collected data is examined to pull out insights and answer the research questions. The results

are looked over to understand what they mean for the bigger picture and any possible issues. Finally, everything is written up clearly ensuring the research is conducted thoroughly from start to finish.

IV. Findings & Discussion of Results

This section outlines the key findings derived from the application of AI in the design process, highlighting the impact on development efficiency and quality. And shows the finding that with the help of custom GPT the efficiency and time are improved even further.

A. Clarity and Precision in Communication

Custom GPT excels in offering clear, precise explanations. This clarity ensures that complex design principles are accessible to all team members, facilitating better understanding and collaboration across departments.

B. Strategic Insights for Future-Proofing Design

Looking ahead, Custom GPT provides strategic insights for developing scalable and flexible design systems. These insights are crucial for organizations aiming to adapt to future changes in technology and user expectations.

C. Commitment to Accessibility and Inclusivity

Custom GPT's strong emphasis on accessibility ensures that designs meet the needs of a diverse user base. This commitment not only broadens access but also enriches user experience, making products more welcoming and user-friendly.

D. Impact on Development Efficiency

The integration of GAI with tools like FIGMA has significantly streamlined the prototype development process, reducing the time from concept to prototype.

E. Enhancement of Design Quality

The use of conversational AI modalities has facilitated a more iterative and user-centric design process, improving the overall quality of the user interface designs.

F. Comparative Analysis of AI Tools

Our analysis revealed that ChatGPT, when integrated into the UX design workflow, not only accelerates the ideation phase but also provides actionable insights that enhance the final design output.

G. Comparing custom GPT with other GPT models

While comparing each model against each other it was found that opting for a custom GPT specifically for Design and development would improve quality, accuracy and overall work speed when compared to using other models such as ChatGPT 4 or ChatGPT 3.5

In summary, the findings underscore the potential of AI technologies to revolutionize the field of web development and design, advocating for their broader adoption and further research into their capabilities and limitations.

V. Conclusion

Custom GPT models are changing the ways of web development and UI/UX design. This research has shown that these tools deliver precise and clear communication making it easier for teams to understand complex design principles and work together seamlessly. The strategic insights offered by custom GPTs help us build future proof systems that can adapt to tomorrow's technological shifts and evolving user needs.

By prioritizing accessibility these models enable us to create digital experiences that welcome all users. Their integration with prototyping tools like Figma transforms from idea to prototype, saving valuable time and resources. Meanwhile, the iterative, user focused approach ensures that our designs are high quality and truly resonate with diverse audiences.

When compared to standard models like ChatGPT 3.5 and 4, custom GPTs have proven their ability to deliver accurate, relevant responses tailored to the specific challenges of design and development. This precision allows teams to work more quickly with greater accuracy and less time consuming resulting in greater results.

However, as with everything in life, there are challenges to keep in mind. Ethical considerations like data privacy, bias, and transparency must be addressed as we continue to explore these tools. Still, the potential of custom GPT models is a clear sign of a future where designers and developers can create greater projects in a shorter period.

Appendix A
Supporting material

Acknowledgement

References

[1] H. Ekvall and P. Winnberg, "Integrating chatgpt into the ux design process," Ph.D. dissertation, Human Computer Interaction and User Experience, 2023.

[2] I. Anggreeni, "Prototyping tools for the early stages of web design," Ph.D. dissertation, Institutionen för datavetenskap, 2006.

[3] S. Bohm and S. Graser, "Ai-based mobile app prototyping: Status quo, perspectives and preliminary insights from experimental case studies," Ph.D. dissertation, University of Applied Sciences, 2023.

[4] E. Fajkovic and E. Rundberg, "The impact of ai-generated code on web development: A comparative study of chatgpt and github copilot," Ph.D. dissertation, Blekinge Institute of Technology, 2023.

[5] A. Henriksson and A. Wingardh, "Artificial intelligence for graphical user interface design," Ph.D. dissertation, Linnaeus University, 2023.