# COMP 4910 Senior Project Design
# Project Presentation, Fall 2024

# GLOWG: Personalized Skin Care Powered by AI

## 16 January 2025, Version 1.0

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# Acknowledgements

**A number of slides in this presentation has been prepared by using slides/figures from Design Specifications**

**Document of GlowGenie**

# Motivation

**Potential of Machine Learning**

- Leveraging recent advancements in AI for skincare personalization.
- Gaining hands-on experience in applying machine learning to real-world problems.

**Career Goals**

- Working on an industry-relevant project to enhance practical skills.
- Building teamwork and collaboration skills through a group-based project.

**Personalized Skincare Systems**

- Addressing a gap in the market for tailored skincare solutions.
- Innovating with AI to create accurate and user-friendly recommendations.

# Outline

- Introduction to GlowGenie
- Project Effort Log
- Flow of the Project

# What Is GlowGenie?

- GlowGenie is a web-based skincare recommendation system that personalizes routines based on user skin type, preferences, and allergens.
- It utilizes AI to retrieve ingredient data from GPT, processes products through machine learning models, and offers tailored suggestions.
- GlowGenie aims to simplify skincare selection and improve user confidence in product choices.

# Effort log

| COMP 4910/4920 Project Effort Log, Project Code: GLOWG, 10.11.2024, v1.0 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Week** | **Dates** | **İrem Demir** | | **Ceren Sude Yetim** | | **Ece Topuz** | | **Gizem Tanış** | | **Total Weekly Effort in Man-Hours** |
| | | **Work Done** | **Total Hours Spent** | **Work Done** | **Total Hours Spent** | **Work Done** | **Total Hours Spent** | **Work Done** | **Total Hours Spent** | |
| **Week 1** | 30.09.24 - 04.10.24 | Define project problem, objectives, and scope. Creation of the team. | 4 | Formed a team for the project and defined some problems to decide on the topic of the project. | 4 | A suitable team was formed for the project and organization was ensured. Project Problem defined. | 4 | Contributed to team formation by defining project goals and discussing potential challenges with team members to clarify the project direction. | 4 | 16,00 |
| **Week 2** | 07.10.24 - 11.10.24 | Project selection. Clearly define the project scope. Advisor selection has been completed. | 4 | Consulted some of the advisor teachers for the project and chose leads for main areas of the project. Selected the project topic. | 4 | Defining a project scope based on a detected problem and selecting the project topic accordingly.Advisor teacher has been determined | 4 | Participated in the project topic selection by discussing identified problems and clarifying the project scope. Assisted in consulting with advisor teachers and selecting team leads for key areas. | 4 | 16,00 |
| **Week 3** | 14.10.24 - 18.10.24 | Determined the project's goals and objectives, and created a preliminary draft of the project proposal form. | 5 | Decided on goals of the project and it's objectives and prepared a draft project proposal form. | 5 | Project goals and objectives were determined and a draft project proposal was prepared. | 5 | Contributed to defining the project’s goals and objectives, assisting in the creation of a draft proposal form to outline the initial project framework. | 5 | 20,00 |

# Effort log

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| **Week 4** | 21.10.24 - 25.10.24 | Project goals determined and prepared the PAF documentation. | 5 | Worked on the draft project proposal form and readied the final version of PAF. | 5 | The project proposal draft was detailed and the PAF file was completed and delivered. | 5 | Assisted in finalizing project goals and contributed to refining the draft proposal. Helped prepare and complete the PAF documentation for submission. | 5 | 20,00 |
| **Week 5** | 28.10.24 - 01.11.24 | Investigate API documentation, integration requirements, and limitations for ChatGPT in a skincare context. | 6 | Conducted research on integrating ChatGPT into the project by examining similar projects to gain insights into successful implementation strategies. | 6 | Similar projects in the relevant field were examined and information that could be a reference for the project was collected. | 6 | Researched API integration options and potential limitations for implementing ChatGPT in a skincare context. Contributed insights from related projects to support integration planning. | 6 | 24,00 |
| **Week 6** | 04.11.24 - 08.11.24 | Research academic sources on skincare science, AI in health, and personalized recommendations. | 6 | Outlined key tasks for the design process and conducted research on potential technologies those most suitable for the project. Continued examining similar projects to gain further insights. | 6 | A literature review on AI in health and AI-driven personalized recommendations was conducted from academic sources. | 6 | Conducted a literature review on skincare science and the use of AI for personalized recommendations. Assisted in outlining design tasks and explored potential technologies to support project development. | 6 | 24,00 |

# Effort log

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| **Week 7** | 11.11.24-15.11.24 | Analysis of similar projects: Review existing skincare recommendation systems and identify gaps to address. | 6 | Conducted research on technologies utilized in similar projects to identify and evaluate the most suitable options for implementation in our project. | 5 | By analyzing skin care recommendation systems, the existence of similar applications and their place in the literature were examined. Additionally, the role and contributions of artificial intelligence in such systems were investigated. | 6 | Developed a preliminary framework for a skincare recommendation system, focusing on defining the user interface and core functionalities based on the insights from similar applications and literature reviews. | 6 | 23,00 |
| **Week 8** | 18.11.24-22.11.24 | Midterm exams week | 0 | Midterm exams week | 0 | Midterm exams week | 0 | Midterm exams week | 0 | 0,00 |
| **Week 9** | 25.11.24-29.11.24 | Identified shortcomings in our current approach and generated ideas for innovative features to improve the system. Assessed the practicality of these concepts by examining their technical requirements. | 7 | Planning the interactions between the components of the project and evaluating their compatibility with one another. | 7 | Organizing how the project's components will interact and assessing how well they work together. | 7 | Evaluated the feasibility of proposed features and contributed to aligning project components with overall objectives. | 7 | 28,00 |
| **Week 10** | 02.12.24-06.12.24 | Researched requirements for GPT API integration, including backend frameworks, libraries, and programming languages for compatibility with machine learning workflows. | 8 | Designing the structure of the machine learning model, including determining its architecture, feature selection, and overall approach to ensure alignment with the project's objectives and requirements. | 8 | Studies were conducted on the solutions we obtained in the literature reviews, including determining its architecture, feature selection, and overall approach to ensure that it was aligned with the project's goals and requirements. | 8 | Researched database optimization techniques and security measures to ensure data integrity and protection. Contributed to identifying potential challenges and solutions for smooth implementation. | 8 | 32,00 |

# Effort log

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| **Week 11** | 09.12.24 - 13.12.24 | Researching the backend structure for the Glow Genie project. My focus was on understanding the necessary technologies, tools, and design patterns to create a robust and scalable backend system | 9 | Planned the project's functionality and user interaction flow, ensuring seamless integration of components and proposing interface ideas to enhance usability. | 9 | Designed the functionality and user interaction flow of the project, emphasizing the smooth integration of components and putting forward creative interface concepts to enhance usability. | 8 | Focused on researching and designing the database structure to ensure efficient data management for the Glow Genie project. | 8 | 34,00 |
| **Week 12** | 16.12.24 - 20.12.24 | Researching UML diagrams to determine which ones would be most suitable for the project. I started designing UML diagrams, including use case, class, and activity diagrams. Additionally, as a team, we roughly sketched the project interface to visualize the overall structure. | 7 | Researched suitable machine learning algorithms, defined their integration strategy, and developed UML diagrams to represent the system's architecture and processes. | 7 | Conducted research on appropriate machine learning algorithms and started drafting UML diagrams to represent system structure and processes. | 7 | Focused on researching database optimization techniques and began creating UML diagrams, including class and entity-relationship diagrams, to design the data architecture for the project. | 7 | 28,00 |
| **Week 13** | 23.12.24 - 27.12.24 | Working on the UML diagrams, refining the designs to ensure they accurately represent the system's structure and functionality. Conducted research to determine what components and features should be included in the project interface. Planning a demo version of the interface, outlining the key elements and their placement | 11 | Based on further research, I refined the UML diagrams and requirements specification document and finalized the machine learning algorithm for the project. | 10 | Refined the UML diagrams and requirements specification based on further research, finalizing the system's entry and registration mechanism. | 9 | Refined the database design and UML diagrams based on further research, focusing on optimizing the data architecture for the project. | 9 | 39,00 |

# Effort log

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| **Week 14** | 30.12.24 - 03.01.25 | This week, due to major changes in the our project, I revised all our forms and UML diagrams to reflect the new direction and updated functionality. I redefined key functions, adjusted the scope to align with the project's goals, and contributed to redesigning how the system components interact. I researched and integrated updates to the backend technologies to improve system performance and ensure seamless operation with the revised requirements. I also worked on updating user interface designs for improved usability and created detailed UML diagrams to clarify system workflows, ensuring the project remains cohesive and on track. | 22 | The project underwent significant changes, so I revised the Requirement Specification Document (RSD) to align with the updated direction. I introduced new functions for the project, finalized how the machine learning models will operate, and defined the structure of the dataset. Additionally, I researched skin type characteristics to design accurate skin type test questions and answer choices, helped editing the survey we made to gather data. I also created UML diagrams for some of the functions, designed interfaces for some features, and worked on improving the overall project flow. | 32 | Significant changes were made within the scope of the project and RSD was reorganized to adapt to the updated goals. In this process, new functions were defined for the project and these functions were explained in detail. Research was conducted to design the right skin type test questions and answer options for the machine learning model to be developed. A survey was prepared and organized for data collection. In addition, UML diagrams were created for specific functions and detailed explanations were added for each diagram. A demo was designed for the project's user interface and included in the development process. | 27 | This week, significant changes were made within the scope of the project, and the Requirement Specification Document (RSD) was reorganized to adapt to the updated goals. I conducted research to design accurate skin type test questions and answer options for the machine learning model. A survey was prepared and organized for data collection. I created UML diagrams for some of the project's functions and added detailed explanations for each diagram. Additionally, I contributed to the design of the user interface and participated in the demo development process. I reviewed and redesigned the database table structures, implementing necessary improvements to optimize data flow. I also reviewed the overall system flow to improve the project's progress and ensure smooth operation. | 22 | 103,00 |

# Effort log

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| **Week 15** | 06.01.25 - 10.01.25 | Some missing functions have been added to the RSD report. Focused on completing the missing UML diagrams for project, ensuring that all necessary diagrams were finalized. Also prepared for the DSD report by organizing the required content and began drafting its initial sections. Additionally, worked on creating packages for the backend structure to enhance organization. | 13 | Existing functions were reviewed and refined, and a new function was added. UML diagrams were created to represent the refined and newly implemented functions, providing a clearer understanding of their structure and interactions. Additionally, significant progress was made on the Data Structure Design (DSD). | 11 | The RSD report was meticulously reviewed, missing functions and UML diagrams were completed and added to the report. In addition, significant progress was made within the scope of the DSD report, and detailed studies were carried out in the analysis and design stages. In this direction, the reports were made more comprehensive and understandable during the project development process. | 13 | This week, I finalized the UML diagrams for the Requirements Specification Document (RSD) and made adjustments. We then transitioned to the Design Specification Document (DSD) and added new content. I also researched database design, focusing on table relationships, optimization techniques, security, data integrity, and backup strategies. | 12 | 49,00 |
| **Week 17** | 13.01.2025 - 17.01.25 | Finalized the final report, DSD report, project web page, presentation and poster to showcase the project's progress and outcomes. | 11 | Worked on final deliverables such as DSD, Final Report, projectWeb, presentation and poster. | 10 | Focused on completing final deliverables, including the DSD, Final Report, project website, presentation, and poster. | 10 | Completed final deliverables, including the DSD report, Final Report, project website, presentation, and poster. | 11 | 42,00 |
| **Week 18** | 20.01.25 - 22.01.25 | Finalized the final report, DSD report, project web page, presentation and poster to showcase the project's progress and outcomes. | 4 | Worked on final deliverables such as DSD, Final Report, projectWeb, presentation, poster. | 4 | Focused on completing final deliverables, including the DSD, Final Report, project website, presentation, and poster. | 4 | Completed final deliverables, including the DSD report, Final Report, project website, presentation, and poster. | 4 | 16,00 |
| **Total Effort in Man-Hours** | | | **128,00** | | **133,00** | | **129,00** | | **124,00** | **514,00** |
| **Total Effort in Man-Days** | | | **16,00** | | **16,63** | | **16,13** | | **15,50** | **64,25** |

# Flow of the Project

- The Glow Genie project has followed a structured workflow, with a focus on the planning, documentation, and design phases:

1. **Initial Research & Conceptualization**
   The project began with research into existing skincare systems and user needs, followed by defining the core objectives and goals of the project.
2. **Requirements Specification**
   Detailed Requirements Specification Documents (RSD) were created, outlining both functional and non-functional requirements, setting clear expectations for the project's features.
3. **System Design & Architecture**
   The system's design was developed, focusing on the overall architecture, user interface, and data structure to ensure a solid foundation for future development.
4. **Documentation Preparation**
   Various documents, including the Requirements Specification Document (RSD) and Design Specification Document (DSD), were prepared to guide the implementation phase and ensure alignment with project goals.
5. **Project Management & Planning**
   A comprehensive project plan was created, detailing the schedule, tasks, and resources needed for the successful completion of the project in future stages.

# Conclusions

- The Glow Genie project has successfully completed its planning and design phases. We've defined the system requirements, created the design, and documented the necessary details. The next steps will focus on development and testing to create an effective and user-friendly skincare recommendation system.

# End of Presentation

# Your Questions Please

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