BSc Project Screening Form

Part 1 – Project Proposal

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Degree Pathway (course)	BSc (Hons) Computer Science
Supervisor Name	Dr. Yasas Jayaweera
Title of Project	VisionHub: A Multi-Platform AI Image Generation System.
Abstract of the project	VisionHub will be a revolutionary multi-platform AI image generation system that will streamline the creative process for digital content professionals. It will integrate multiple AI image generators into a single, user-friendly interface, addressing challenges such as inconsistent image quality, varied pricing structures, and time-consuming workflows. The system will allow users to select desired moods, resolutions, and sources from a comprehensive list while utilizing an advanced prompt enhancer to refine inputs for optimal outputs. VisionHub will generate images from various sources simultaneously and organize them in an intuitive gallery, where each image will be stored with detailed metadata. It will also incorporate essential editing tools, such as background removal, to provide users with a complete solution for creating customized visual content. By consolidating these capabilities, VisionHub will significantly reduce both the time and cost associated with using multiple standalone services. The platform will leverage modern web and mobile technologies to ensure secure, scalable, and responsive performance, adapting to evolving market demands and technological advancements. Ultimately, VisionHub will empower content creators to produce consistent, high-quality images with minimal effort, setting a new standard for AI-driven digital media production. This innovative platform will revolutionize creative processes and redefine digital media production standards globally.
Project deliverables	A. Software • Fully Functional Web App • Mobile App B. Hardware • N/A C. Documentation (Doc) • Project Proposal Document • Ethics Form • Contextual Report • System Design Documentation • Testing and Evaluation Report •

	• Final Dissertation/Project Report • User Documentation
Description of your artefact	A. Aim To simplify and optimize the AI image generation process by integrating multiple AI services into a single, accessible platform for digital content creators. B. objectives To achieve this, the project will focus on several key objectives • **To design** an integrated platform that combines diverse AI image generators, offering a wide range of high-quality outputs with organized galleries and detailed metadata. • **To develop** advanced features such as a prompt enhancer for refining user inputs, multi-source image generation, essential editing tools (like background removal), and robust security with flexible pricing options. • **To evaluate** the system's effectiveness in empowering professionals by streamlining creative workflows, reducing time and cost burdens, and enhancing the quality of visual content. C. List of features 1) Multi-Source Image Generation: Integration with multiple AI generators for varied image creation options. 2) Prompt Enhancer: Optimizes user inputs for better image results. 3) Customizable Settings: Choose image resolution, style, and mood. 4) Image Gallery: Displays and organizes generated images. 5) Editing Tools: Includes background removal and basic adjustments. 6) Metadata Tracking: Stores image details like prompt, time, and source. 7) Secure Login: Ensures user privacy with authentication. 8) Flexible Pricing: Offers subscription or image packages for various needs. 9) Cloud Storage: Securely stores generated images for easy access.

	10) Cross-Platform Access: Available on both web and mobile devices.
Risk analysis	**1) API Limitations** A. **Problem:** API usage limits or restricted access could hinder functionality. B. **Probability & Impact:** Medium probability, high impact. C. **Mitigation:** Use multiple APIs and fallback mechanisms. Monitor API usage to avoid limits. **2) High Processing Costs** A. **Problem:** High computational costs from using multiple AI image services. B. **Probability & Impact:** High probability, high impact. C. **Mitigation:** Optimize image workflows, use scalable cloud services, and monitor resource usage. **3) Performance and Scalability** A. **Problem:** Platform performance issues during high traffic. B. **Probability & Impact:** Medium probability, high impact. C. **Mitigation:** Use load balancing, cloud hosting, and caching for better scalability.
How does your project relate to your degree course and build upon the units/knowledge you have studied/acquired	The VisionHub project applies key skills from the BSc (Hons) in Computer Science by utilizing AI, machine learning, and cloud computing. It draws on programming languages like Python and JavaScript, with a focus on security and networking concepts. The project connects to modules on emerging technologies and cloud platforms, showcasing the application of diverse technical skills to create an AI-driven solution.
Resources required in developing the artefact	**A. Technologies:** 1) Python 2) Django 3) FastAPI 4) HTML5 5) CSS3 6) Tailwind CSS 7) JavaScript (ES6) 8) MySQL **B. Software:**

	1) Visual Studio 2) Laragon 3) Apache 4) Figma 5) Git 6) GitHub 7) Notion **C. Hardware:** 1) High-performance computer (8GB RAM or more) 2) SSD 3) Server for backend and data storage	
Have you completed & submitted your ethics form?	YES	NO
If the project is a development of previous work by yourself or others, give details below. Failing to declare such previous work here may be treated as an academic offence		

Supervisor Signature:

After the proposal has been signed off by both the supervisor and course coordinator scan the proposal and upload on BREO with signatures. Projects that follow proposals that have not been approved may be cancelled and there will be no compensation for any time lost

Part 2 – List of relevant resources

Fill in this section after your project proposal has been approved by your supervisor. Use Harvard referencing (see https://lrweb.beds.ac.uk/a-guide-to-referencing). Modify the list below as appropriate. This list is part of Assignment 1 and will be submitted with the Project Proposal.

1. *Books*
    a. *Matthes, E. (2023) Python Crash Course, 3rd Edition: A Hands-On, Project-Based Introduction to Programming. 3rd ed. No Starch Press.*
    b. *Vincent, W. S. (2022) Django for Professionals: Production Websites Using Python & Django 4. 2nd ed. W.S. Vincent.*
    c. *DeBarros, A. (2021) Practical SQL, 2nd Edition: A Beginner's Guide to Storytelling with Data. 2nd ed. Pragmatic Bookshelf.*

d. *Wathan, A. and Schoger, S. (2019) Refactoring UI: The Book. Refactoring UI.*
e. *Martin, R. C. (2008) Clean Code: A Handbook of Agile Software Craftsmanship. Prentice Hall.*
f. *Duckett, J. (2011) HTML and CSS: Design and Build Websites. Wiley.*

2. *Journal Papers*
    a. *"Django Performance Tips and Tricks" (2021). Django Best Practices. Available at: https://www.djangoproject.com/. [Accessed 25 February 2025].*
    b. *"FastAPI Asynchronous Programming and High-Performance APIs" (2022). FastAPI Documentation. Available at: https://fastapi.tiangolo.com/. [Accessed 25 February 2025].*
3. *Web Sites with relevant information*
    a. *DALL·E (2025) DALL·E Image Generation. Available at: https://openai.com/dall-e. [Accessed 25 February 2025].*
    b. *MidJourney (2025) MidJourney Image Generator. Available at: https://www.midjourney.com. [Accessed 25 February 2025].*
    c. *Stable Diffusion (2025) Stable Diffusion Image Generator. Available at: https://stablediffusionweb.com. [Accessed 25 February 2025].*
    d. *DeepAI (2025) DeepAI Image Generator. Available at: https://deepai.org/machine-learning-model/text2img. [Accessed 25 February 2025].*
    e. *Leonardo (2025) Leonardo AI Image Generation. Available at: https://www.leonardo.ai. [Accessed 25 February 2025].*
    f. *Django Documentation (2025) Django Documentation. Available at: https://docs.djangoproject.com/. [Accessed 25 February 2025].*
    g. *FastAPI Documentation (2025) FastAPI Documentation. Available at: https://fastapi.tiangolo.com/. [Accessed 25 February 2025].*
    h. *Tailwind CSS Documentation (2025) Tailwind CSS. Available at: https://tailwindcss.com/docs. [Accessed 25 February 2025].*
    i. *SVGRepo (2025) Free SVG Icons. Available at: https://www.svgrepo.com. [Accessed 25 February 2025].*
    j. *Remix Icons (2025) Remix Icon Set. Available at: https://remixicon.com. [Accessed 25 February 2025].*
4. *Relevant software*
    a. *HTML: Latest version (HTML5)*
    b. *CSS: Latest version (CSS3)*
    c. *Tailwind CSS: Version 3.0 (or latest stable version)*
    d. *Python: Version 3.10 (or latest stable version)*
    e. *Django: Version 4.x (or latest stable version)*
    f. *JavaScript: ES6 (ECMAScript 2015) or latest version*
    g. *Visual Studio: Version 2022 (or latest stable version)*

h. *FastAPI: Version 0.95 (or latest stable version)*
i. *Laragon: Version 5.0 (or latest stable version)*
j. *Apache: Version 2.4 (or latest stable version)*
k. *MySQL: Version 8.0 (or latest stable version)*
l. *Figma: Web version (or latest desktop version)*

5. *Relevant hardware*
    a. *High-performance Computer with at least 8GB RAM*
    b. *SSD for faster application loading times and database access*
    c. *Server to run the application backend and store the data*
6. *Other*
    a. ***Git** (2025) Git: Version control system for tracking changes in source code. Available at: https://git-scm.com. [Accessed 25 February 2025].*
    b. ***GitHub** (2025) GitHub: Platform for version control and collaboration using Git. Available at: https://github.com. [Accessed 25 February 2025].*
    c. ***Notion** (2025) Notion: Project management and collaboration tool. Available at: https://www.notion.so. [Accessed 25 February 2025].*