**Justification of Disciplinary Focus Report**

**IBEHS 5P06A**

**September 18th, 2025**

**Team 9**

**Instructor**

**Dr. Ian Bruce**

**Dr. Vince Leung**

**Dr. Cheryl Quenneville**

**Co-Instructor**

**Dr. Spencer Smith**

**Stakeholder**

**Zhuo Wang (Dental Assistant)**

**Group members**

**Jasmine Wang wangj500 Student# Software Stream**

**Ruidi Liu liu127 400296859** **Software Stream**

Motivation (Problem or Needs Identification)  
o Describe the client’s problem or need to provide the context for developing a new  
design for the problem. You want to justify the need for your capstone project  
♣ Demonstrate an understanding of the client’s problem or need. Use published  
and peer-reviewed literature that may detail the need for the problem  
• Solution Statement (Design Aspect of the Project)  
o Your team’s proposed (high-level) approach to solving the problem. You want to  
foreshadow the different aspects of the project your group wants to solve

!!! We need a actual brand name o The expected contributions of each team member (or program specialization) are  
described in the context of a design process  
  
♣ Students must explain how their team member(s) expertise and educational  
background aligns align with project objectives  
o Groups can split the project aspects however they see fit, whether it is done  
individually, in pairs or sub-teams (e.g., based on program specialization), but students  
should describe who is handling each contribution and why

# Educational Background and Expected Contributions

This section outlines the division of responsibilities for the software application development. The team will utilize Git for version control to manage the codebase efficiently.

**Individual Responsibilities**

Jasmine: Backend Development

Jasmine’s previous experience with AI and ML models in academic projects makes her an ideal member for AI development and integration. MIGHT NEED SOMETHING TO JUSTFY BACKEND. She will be responsible for designing, implementing, and maintaining all server-side logic, databases, and the AI model training lifecycle. This includes researching advanced imaging processing techniques to develop, train and optimize dental image analysis ML models. In addition, she will be responsible for integrating trained models with the application backend, ensuring a unified, secured and robust system.

Ruidi: Frontend Development

The completion of SFWRENG 4HC3 Human Computer Interface last semester will help Ruidi to design and develop the client-side user interface and experience (UI/UX). Her previous knowledge of UI design and frontend development from academic courses and CO-OP positions would cpme

This involves designing and prototyping the mobile application interface to ensure an intuitive and engaging user journey. User analysis and usability testing are required to guarantee accessibility and a seamless experience across various platforms.

* + Integration with the trained AI model; implementation of the frontend components to clearly display AI-generated analysis results and present associated educational content to the end-user.

**Collaborative Responsibilities (Jasmine & Ruidi):**

Both members will share responsibility for key project phases that require interdisciplinary input. This includes conducting joint research into existing technologies, dental needs, and market gaps to inform project direction. They will collaboratively conduct interviews with stakeholders and dental professionals to define user needs and establish functional and non-functional requirements. This foundational work will directly feed into the shared task of defining precise system design elements and specifications. A core shared duty will be managing the end-to-end system integration and conducting iterative testing cycles to validate functionality and user experience. Finally, both members are jointly accountable for comprehensive project documentation, economic analysis, and the development of the final presentation.

Jasmine, with a background in Computer Science, will assume lead responsibility for the backend architecture, including AI model integration and database management. This leverages her core competencies in algorithms and data structures, which are fundamental to creating a robust and scalable intelligent system. Conversely, Ruidi's focus in Design Arts is ideally suited for leading the frontend development and UI/UX design; her formal training in human-centered design ensures the application will be intuitive and meet the aesthetic and functional needs of both patients and dental professionals. Furthermore, the interdisciplinary nature of this project necessitates close collaboration on all phases of the design process. Both members will jointly conduct stakeholder interviews and market research to define requirements, ensuring the technical and design elements are grounded in real-world needs. This collaborative approach extends to system integration, iterative testing, and prototyping, where both technical and design perspectives are critical for successfully merging the hardware and software components into a cohesive and validated final product.

* + Design, implementation, and maintenance of all server-side logic, databases, and the AI model training lifecycle. This includes researching advanced imaging processing techniques to develop, train and optimize ML models for dental imaging analysis.

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