COMP704 Research and Development Project

VN01 3D acupuncture healthcare data management and treatment system

Project Overview
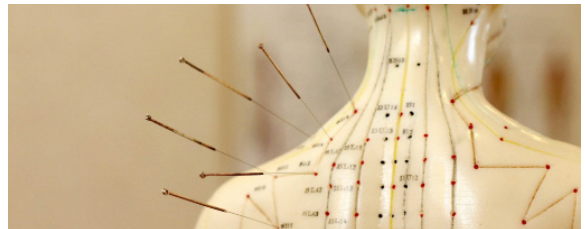
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1. DOCUMENT INFORMATION

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3. DOCUMENT VERSIONS

Version	Timestamp	Description	Responsible members
1.0	24 Oct 2022 18:45	Basic information about the Project, based on the description from the Project Prospectus document.	**Nhan Nguyen Cao** *(21142377)* **Trang Ho Ngoc Thao** *(21142358)*
2.0	21 Apr 2023 10:40	Update the description, scope and list of functionalities to match with the second version and approach of the project (Research and Development approach).	**Nhan Nguyen Cao** *(21142377)*

I. PROJECT BACKGROUND

Traditional Chinese Medicine (TCM) has long been one of the most fascinating subjects studied by several researchers in a variety of professions. The system, which is supposed "thousands of years old and has changed little throughout the centuries" (Chinese Medicine, n.d.), contains some of the cures for many illnesses or symptoms that Western medicine cannot simply treat. Acupuncture is one of the most widely used types of TCM that is today practiced in many nations, from the East to the West of the entire world.

According to traditional Chinese medicine, the purpose of acupuncture is to regulate the flow of life force (often referred to as Qi) and energy in your body. It involves inserting extremely tiny needles through your skin at specific locations known as acupuncture points (Acupuncture, 2022). It is indisputable that people who use acupuncture to treat their pain in various body sections might have favorable results.

However, researching acupuncture is not always a simple task. Finding the correct acupuncture points to apply is a very difficult skill to learn, especially for university students majoring in Traditional Chinese Medicine or for inexperienced practitioners, given the fact that our human body contains more than 360 acupuncture points spread across about 20 meridians, not a small number reflecting a complex system that runs along the body.

Even while the textbooks used in university acupuncture teaching and learning include pictures as illustrations for learning about acupuncture points and meridians, it can never be as effective as learning via practice and interactions. It is, however, exceedingly challenging for the students to understand more deeply and investigate more about acupuncture outside of their lessons because they lack the condition to learn from the physical model outside of their lectures. Gathering the demands of the students highlighted the need for a method that would make learning about acupuncture more interactively, which would undoubtedly be more beneficial than studying from books and paperwork.

II. PROJECT DESCRIPTION

Taking advantage of the chance, our Research & Development project aims to provide a companion that could assist medical university students or inexperienced practitioners in acquiring the necessary skills to enter the practical acupuncture profession.

Our system, called the "3-D acupuncture healthcare data management and treatment system", provides a website with an interactive 3D human body model that has already been marked with the basic acupuncture points and meridians at appropriate locations. We offer this approach to demonstrate the physical model used in teaching and giving the students practice in locating the acupuncture points and meridians, at the university. Our method will help students overcome the challenges of learning from static images or text in books by allowing them to interact visually and practically while learning about acupuncture points and meridians.

Furthermore, we want to offer our system as a platform so that medical students can monitor their educational progress and examine what they have already learned. Besides, to deliver a system where not only the students but also those interested in acupuncture, can search and expand their domain knowledge about the acupuncture points and meridians, we also try to incorporate into the system the knowledge that is medically trusted, provided by our specialist consultants who are also lecturers in Traditional Chinese Medicine in Ho Chi Minh City, Vietnam.

III. PROJECT SCOPE AND OBJECTIVES

III.1. GOALS & OBJECTIVES

III.1.1. PROJECT GOALS & OBJECTIVES

Our detailed goals and objectives for the project of the 3-D acupuncture healthcare data management and treatment system include:

- Acquire an understanding of acupuncture, the basic concept, and principles of the technique in healing pain and treating common diseases.
- Acquire an understanding of the findings of existing experiments on advanced technology to the scope of acupuncture, as an inspiration for the project.
- Being able to come up with proposals about applying advanced technology in acupuncture modeling, to better the functionalities and resolve the problems of some existing solutions in the market.
- Provide a 3-D model of a cut-off human body, with acupuncture points marked and related internal organs, and components included to guide and instruct the implementation of acupuncture treatment.
- Provide a data-based management and information system about acupuncture and knowledge involved within the field, such as the locations, functionalities, injection methods of the points, or the important meridians of the human body.

III.1.2. PERSONAL GOALS & OBJECTIVES

From the perspective of each member of our group, our goals and objectives for this project include achieving the following skill sets:

- Technical skills

  - Paper research skill
  - Data mining techniques
  - Programming skills: Web Development skills with 3-D rendering products
  - Testing skills
  - Version control and source management skills

- Soft skills

  - Project management and development skills: SCRUM Framework, Agile methodologies
  - Documentation skill
  - Brainstorming skill
  - Team-work skill
  - Communication skill
  - Human relation skill

III.2. PROJECT SCOPE DESCRIPTION

The research phase includes upskilling and acquiring useful knowledge and information related to acupuncture, such as the acupuncture points, the meridians, etc, from trustful sources suggested by the specialist consultants. The final product includes a 3-D model platform for acupuncture exploration and learning, with the acupuncture points, 14 meridians (including 12 main meridians and 2 extraordinary meridians) and a human body model displayed.

III.2.1. WHAT IS TO BE INCLUDED – IN SCOPE?

- A research about the experiments of applying advanced technologies into the field of acupuncture treatment.
- Collection of domain knowledge data about Acupuncture points and Meridians, in both Vietnamese and English, from medically trusted books and presentation slides, provided and suggested by the acupuncturists.
- A 3-D interactive human body with 362 acupuncture points and 14 meridians (12 main meridians and 2 extraordinary meridians).
- An Acupuncture Domain knowledge Search system, allowing searching about basic information of 362 acupuncture points and 14 meridians.
- Quiz and Personal Learning Progress feature to support Medical University Students (main users of the project) with their learning progress about Acupuncture using the system.

III.2.2. WHAT IS NOT TO BE INCLUDED – OUT OF SCOPE?

- Advanced 3-D animation for the display of acupuncture points and meridians.
- Anatomy mode for the 3-D model, of internal organs and internal anatomy structure (Excluded later during the project due to lack of budget).
- Inclusion of deep medical knowledge of the internal organs and blood vessels, as well as explain or provide information about how they can be beneficial from acupuncture treatment from an advanced point of view.

III.3. PROJECT REQUIREMENTS

Since the list of Functional Requirements and Non-Functional Requirements for the Project is updated many times during the implementation, especially during the first phases of Project Proposal and Research, there would be another documents (the Scope Statements – ScS documents) responsible for managing the list of Requirements for the project.

IV. REFERENCES

Acupuncture. (2022, April 30). Retrieved from Mayo Clinic: https://www.mayoclinic.org/tests-procedures/acupuncture/about/pac-20392763

Chinese Medicine. (n.d.). Retrieved from Johns Hopkins Medicine: https://www.hopkinsmedicine.org/health/wellness-and-prevention/chinese-medicine