

# Student Innovation (Secondary Schools) Bronze Award

## 學生創新(中學)銅獎

### St. Louis School 聖類斯中學

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#### Medical Intelligent Aid

##### Background

Stress is a serious issue in modern society. It can be caused by different factors, such as education, work and illnesses.

While there are stress relief, its availability is rather low. For creative hobbies, they may require more space or time than a busy modern lifestyle allows for. Physical equipment like cameras, canvas and paint can be expensive. For therapy, it is too expensive. Statistics has shown, a session in the US cost at least 135 USD.

##### Our Solution

Our solution is a Python 3.X programme that makes use AI services to provide fun and relaxing experiences. It is known as Medical Intelligent Aid, fondly nicknamed as M.I.A.

M.I.A. provides several modes:

In Picture Production, input a prompt to help make your imagination to a reality. Additionally, speech-to-text is also supported.

In Motion Melodies, use hand gestures to play musical notes. This supports up to 4 player.

In Gesture Games, follow the robotic hand' s gesture for a fun exercising experience.

##### 背景：

在現今社會中壓力是一個不容忽視的問題，不論在學業、工作或疾病等方面都可引起壓力問題。

而縱使市面上有各種紓緩壓力的方法，但其的成效過低。在創作治療方面，都市人未必有空閒的時間和空間用以創作，而相機，畫布、顏料等實體設備亦需要一定成本。再者心理治療方面，根據統計，在美國進行一次心理輔導的費用至少說135美元，可見所需的成本過高，對一般人來說太昂貴。

##### 解決方案：

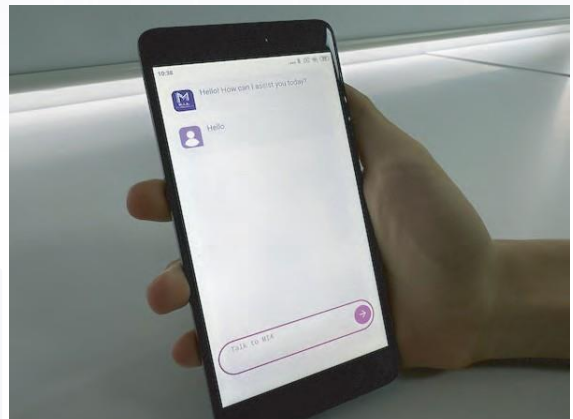
我們的程式 Medical Intelligent Aid(M. I. A. ), 利用不同AI功能來提供有趣和放鬆的體驗以達致減壓的成效。

##### M. I. A. 的功能：

Picture Production: 用家只要利用文字輸入或語音輸入關鍵字便可以將你的想像變為現實。

Motion Melodies: 用家可以最多四人同時演奏利用手勢來演奏音樂。

Gesture Games: 用家可以通過跟隨機械手的手勢獲得有趣的鍛鍊體驗。



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### Medical Intelligent Aid

In Chatty Companion or on an accompanying app, Mobile Intelligent Aid (also referred as M.I.A.), seek companionship and advice from a chatbot.

#### Impact & Applications

For regular users, we hope to improve their mental health through these artistic and accessible hobbies.

However, it also potential applications in therapy.

For example, Picture Production can let counsellors understand patients' situation quickly and remotely. Gesture Games can also be used for physical therapy, especially for those in recovery from injuries. The app also has a questionnaire and functions that tell the users to seek professional if absolutely necessary.

It should be noted that it cannot replace counsellors nor therapy, it is merely an aid.

#### Technological Aspect

We use pygame, a python package, for the user interface. For the Gesture Games, cvzone and mediapipe are used to help recognize hand gestures through landmarks. For the Picture Production and the chatbot, we make use of various APIs by OpenAI.

Chatty Companion/附加手機程式:用家可以通過與機械人聊天，以尋求陪伴和建議。

#### 預期的影響及應用：

首先對一般的用家來說，我們希望通過這些簡單而富有藝術性的活動從而改善他們的心理健康。

而對於心理治療方面，M. I. A. 亦可用作輔導治療師。例如，Picture Production可以讓治療師遠程快速了解患者的情況，而Gesture Games還可以用於物理治療，特別是對於正在從病患中恢復的有需要人士。再者該應用程式還具備問卷和聊天功能，可告訴用戶在絕對必要時尋求專業人士的幫助。但它不能取代治療師或心理輔導，而是作為輔助以幫助用家。

#### 技術方面：

在使用者介面中，我們使用了pygame(python套件)製作，而在Gesture Games功能中，我們使用了cvzone和mediapipe透過模型識別手勢，而在Picture Production和聊天機械人中，我們使用了OpenAI的各種API以完成圖片製作聊天等功能。

