

# 智能情境實驗室



## Ambient Intelligence Instruction lab 元智大學工業工程與管理系所

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本實驗室提供學生進行人因工程智能實驗的環境，透過情境式教學使學生熟悉儀器的應用。研究主題為腦部認知動態分析、眼動視覺軌跡追蹤、臉部表情特徵辨識等應用於人因科學領域。

This laboratory dedicated to provide an intelligent Human Factor experiment environment and help students familiarize the equipment to apparatus manipulation and application. Our topics are focusing on brain cognitive dynamic analysis, eye vision pursuit tracking, facial expression features recognition in the field of human factors science.

### 眼動儀「情境式 SOP」

#### The Standard Operation Procedure of Wiping and Housekeeping

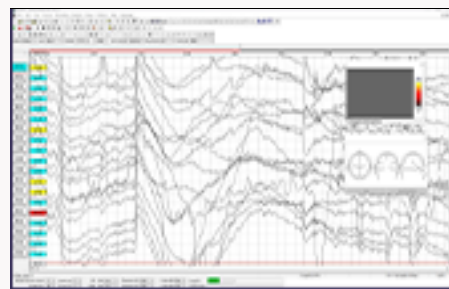
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為使作業員動作流程標準化，透過眼動儀設備進行人員動作的資料蒐集與分析，觀察到其視線軌跡的差異，驗證標準流程認知中存在問題。以創新方式將傳統文字 SOP 以故事性架構設計與圖像化製作，來平衡個體認知差異，以達到生產品質的一致性。

In order to standardize the operator's action process, the data collection and analysis of personnel actions were carried out through the eye tracker device. The differences in their gaze trajectories were observed to verify that problems in the cognition of the standard process. The traditional text SOP is designed with a story-like structure and imaged to balance individual cognitive differences to achieve the consistency of production quality.

### 腦電波儀

### Electroencephalograph

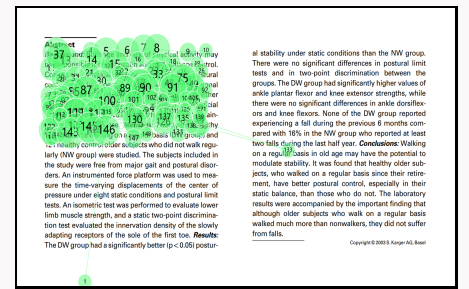


利用腦波帽之電集量測腦部訊號變化，並解析出 alpha, beta, gamma 波形來分析各種人體變化，包含情緒辨識、放鬆 / 壓力檢測、睡眠監控。

Acquiring brain signal changes by dry electrode cap, further transforming data into different wave such as Beta, Alpha Theta, etc. Then use to analyze the physiological changes including emotion, relaxation, stress detection, fatigue prediction.

### 眼動儀

### Eye Tracking

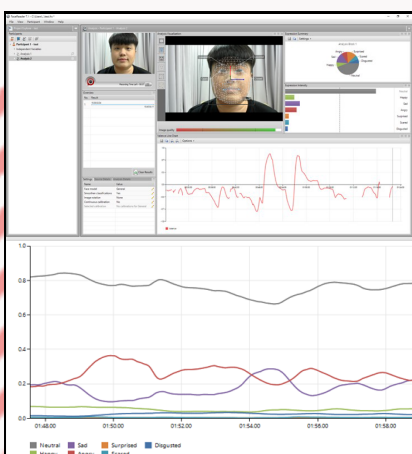


透過偵測眼球運動軌跡的追蹤，並以熱點圖形式呈現視覺凝視的範圍，並廣泛應用於介面設計與產品外觀設計的領域中。

By analyzing the eye tracking scanpath, we can obtain visual information from Heat map, Gaze plot, Area-of-interest (AOI). And extend it to UI, product appearance design, detection, fatigue prediction.

### 臉部表情分析

### Facereader



透過影像處理的方式擷取使用者的臉部情緒特徵，並根據事前建立之數據資料庫進行情緒比例的演算，常用於使用者經驗分析與情緒相關研究上。

Using captured users' facial emotions to calculate different emotions' probability ratio based on pre-established database. Used on user experience analysis and emotion-related research.