

2016 年臺灣國際科學展覽會 優勝作品專輯

作品編號 100024

參展科別 工程學

作品名稱 **HOW HIGH ARE YOU REALLY
JUMPING?**

得獎獎項 一等獎

國 家 **South Africa**

就讀學校 **Point High School**

作者姓名 **Erjee Dames**

Abstract

Purpose

High-jump athletes are not always aware of the exact height they are jumping. They know that they are clearing the height set by the bar, but not their specific height, which may in fact be a record without them even knowing it. The purpose of this project is thus to design and make a device that will enable high-jump athletes to know exactly how high they are jumping.

Procedure

Background research was conducted and it was confirmed that no similar products are currently available. Possible types of sensors and micro-controllers were then investigated and then both a prototype and model were built to test the concept.

Appropriate changes and adjustments were then made to the design until all functions were working accordingly. With the assistance of an experienced software developer, a program was designed to communicate the data collected from the sensors into a graphical user interface.

Results

Many variables, contributing to the accuracy of the obtained results, had to be taken into consideration. These variables include interference with the sensors, which resulted in less accurate readings, as well as weather conditions. The latter was found not to have as drastic an effect on the results.

Conclusion

A device that enables athletes to measure the true height they are clearing was successfully designed and created.

This device will thus be able to help motivate athletes by measuring their true capabilities.

【評語】 100024

1. 本作法能以實際的運動需求出發，進行系統開發與研究，所完成作品目前已達到 1 cm 的精度，可有 6 個刻度，但在實際系統上，此一精度及刻度均可進一步提升，此一系統的可延伸性相當優異。
2. 系統的設計能夠考慮校準、精度、可擴充性表現優異。