

# 2015 年臺灣國際科學展覽會 優勝作品專輯

作品編號 100034

參展科別 工程學

作品名稱 **Development of a compact, self-stabilizing  
handheld camera mount**

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## Summary

My purpose of the Research was build a small, compact device for the GoPro, which minimizes shocks that are typically caused by running and makes the video stable.

The device must fit into a backpack and must be designed for the GoPro.

This scenario raised two central questions for me:

Which laws of physics are used for the stabilization of the camera?

How can those laws of physics constructively be transformed into a working device?

I have built four prototypes. To know which prototype was the best, I compared them and gained data into diagrams. The result with the last prototype was very impressive and encouraging, whether your are walking, running or skiing, the videos were no longer shaky. My final prototype consisted of a hollow tube which extended vertically.

My conclusions: First the handheld camera mount mustn't be too light, as the inertia of the device is too low. Second it mustn't be too heavy, because you normally have to hold it over a certain time interval. Inertia as well as lever principal were essential to produce a smooth video. The most difficult part to build was the fully gimbaled suspension because it requires as little friction as possible and it must be precise and solid.

## 【評語】 100034

1. 本作品以簡單的物理原理配合上優秀的機構設計來達成設計目標，以工程作品的角度來看，此作品可視為一個相當優秀的展示設計。
2. 作品經過數個世代的改進，且能記取前段的優缺點逐步改進工程改進的理念。