



## TECHNOLOGY

# Electronic Home Plate

## OVERVIEW

### Background:

The human factor of umpires in baseball calling balls and strikes can be contentious even with the best of the best behind home plate. The “strike zone”, and its perception by a person two people behind the batter, is less than precise and the subjectivity of the call of ball or strike can affect the outcome of the game. This particularly true in Little League and scholastic league games there the umpires are typically nonprofessional and volunteers. Precise determination of the speed and location of a ball as it crosses the plate can also provide valuable assessment and training opportunities for pitchers and batters, both during the course of a game or training session and over an entire season or career

### Innovation:

Researchers at the University of Maryland have developed an electronic home plate (EHP). This device is intended as a drop-in replacement for the home plate used in baseball and softball. It uses an electro-optical setup along with novel signal processing to precisely measure the vertical and lateral position of a ball passing over the plate, as well as its velocity. It compensates for ambient light either from the sun or a modulated light source, and will adaptively adjust its trigger levels, ambient light set-points, measurement deadzones and the like as lighting conditions change. The user can adjust what the strike zone is defined as, and the device can give a visual indication of ball/strike if desired. The system is fully battery powered and uses wireless Bluetooth connectivity to interface with a tablet pc or smartphone.

## APPLICATIONS

- Assessment of pitcher performance in scouting and training
- Evaluation of pitchers in bull-pen
- Assisting umpires in calling balls and strikes
- Applicable in both baseball and softball
- Can be used for hitter training as well using slightly modified bats with reflective stripe

## ADVANTAGES

- Accurate for baseball speeds well over 100 mph
- Automatically adjusts for different vertical strike zones of the different sizes of batters
- Useable in all types of normal “baseball” weather in terms of dirt, dust, and moisture
- Effective under all ambient light situations – from bright daylight to overcast to artificial lighting
- Completely safe to eyes of batters, catchers and umpires
- Can be used to tell how fast a batter swung their bat, and if they checked their swing
- Provides information about ball trajectory
- Peripheral vision on the sides of the plate to aid in advanced pitcher training

## CONTACT INFO

UM Ventures  
0134 Lee Building  
7809 Regents Drive  
College Park, MD 20742  
Email: [umdtechtransfer@umd.edu](mailto:umdtechtransfer@umd.edu)  
Phone: (301) 405-3947 | Fax: (301) 314-9502

## **Additional Information**

### **INSTITUTION**

University of Maryland, College Park

### **CATEGORIES**

- Robotics
- Engineering
- Microelectronics
- Robotics
- Sensors/Monitors

### **EXTERNAL RESOURCES**

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