

# CyWee Phone API Reference

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**Limited Release**

**Normal**

## Revision History

Version	Description	Author	Date
1.0	* First Version	Henry, Tigran	2009/9/25
1.1	* Modify some data type of structure cywee_data_t, * Fix Figure notation error * MR sensor Figure error	Henry	2009/9/29
1.2	* Modify API definition to fit CyWee Spec * Reserve some API for future release * Modify API to JNI style	Henry, Tigran	2009/12/22
1.3	* Add PC game application API	Henry, Tigran	2009/12/25
1.4	* Change API interface * Change motion API output	Henry, Tigran	2010/4/7
1.5	* Separated <b>JNI</b> and <b>Middleware API</b> descriptions. * <b>Added new APIs for</b> JNI :setMotionThresholdValueFactor, setShakeMotionThresholdValueFactor and getLibVersion. * <b>Added new API for middleware:</b> CYWEE_Control_set_motion_threshold_value_f actor, CYWEE_Control_set_shake_motion_threshold_ value_factor.	Henry, Tigran	2010/04/16

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## Introduction

### 1.1 CyWee Motion Recognition Tech.

#### 1.1.1 Usage

The CyWee motion recognition technology can provide the motion recognition result and 9-axis sensor rawdata output (3-axis accelerometer + 3-axis gyroscope + 3-axis magnetic sensor) by using a 3-axis accelerometer ( $A_x$ ,  $A_y$ ,  $A_z$ ), a 2-axis gyroscope ( $G_{wx}$ ,  $G_{wz}$ ) and a 3-axis ( $M_x$ ,  $M_y$ ,  $M_z$ ) magnetic sensor. The phone coordinate is shown in figure below:

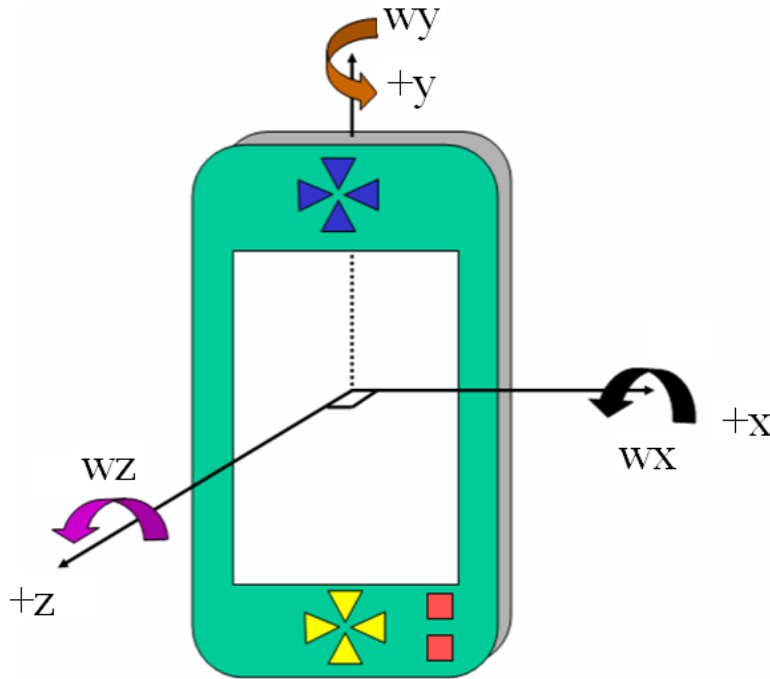


Figure 1

3-axis accelerometer ( $A_x$ ,  $A_y$ ,  $A_z$ ) contains  $A_x$ ,  $A_y$  and  $A_z$  sensing axes. Each sensing axis aligns to the phone coordinate. The  $A_x$ 's "x" means aligning to phone coordinate +x. The  $A_y$ 's "y" means aligning to phone coordinate +y. The  $A_z$ 's "z" means aligning to phone coordinate +z. The gyroscope's  $G_{wx}$  means aligning to phone coordinate +wx.  $G_{wy}$  means aligning to phone coordinate +wy.  $G_{wz}$  means aligning to phone coordinate +wz. The magnetic sensor's  $M_x$  means aligning to phone coordinate +x.  $M_y$  means aligning to phone coordinate +y and  $M_z$  means aligning to phone coordinate +z.

### 1.1.2 Protocol

All sensors' rawdata can be got from the CyWee library. These data format maybe become different from the original rawdata got directly from each sensor through I2C interface.

## 1.2 CyWee API introduction

CyWee provides the API library to access the CyWee sensors data from middleware and Java applications as well. The library name is **libcywee\_sensorapi\_vX.Y.so**, where X and Y are the major and minor versions of the library. Library can be linked as a shared library to the middleware application development and also can be use as JIN library for Java APK developers. For Java APK developers CyWee also provides additional helper Java package **cywee.sensor.api** to manage the sensors data.

API is classified into several modes. They are *Rawdata mode*, *Motion mode*, *Orientation mode* and *PC application mode*.

### 1.2.1 Raw mode

This API provides all the sensors rawdata. It contains 3-axis accelerometer, 3-axis gyroscope and 3-axis magnetic rawdata.

### 1.2.2 Motion mode

This API provides the motion recognition results due to the motion of waving the phone in several directions. The motion can be as Figure 2\_1~Figure 2\_3 showing:

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