



mHealth ANT+ PC Application

User's Guide

Mladen Milošević

Wil Gilmore

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1 Introduction

The mHealth Ant+ PC Application is a Windows application for collecting physiological data from wearable sensors using the ANT+ protocol, including heart rate, RR intervals, number of steps taken and cadence. The application is capable of uploading collected physiological data to the mHealth server, as well as can graphically display data both from the mHealth server and from the sensors as data is collected. In addition, the application is capable of event logging while data is being collected. Use of this application requires an ANT+ USB stick. Instructions on how to install and use the ANT+ USB stick are provided in Section 3 of this document.

The purpose of this document is to outline the basic functionality of the application, including its more commonly used features. An additional section on connecting sensors to the ANT+ application is also included.

2 Application Overview

2.1 Settings

Upon starting the application, the user is greeted with the *Settings* tab, shown below in Figure 1.

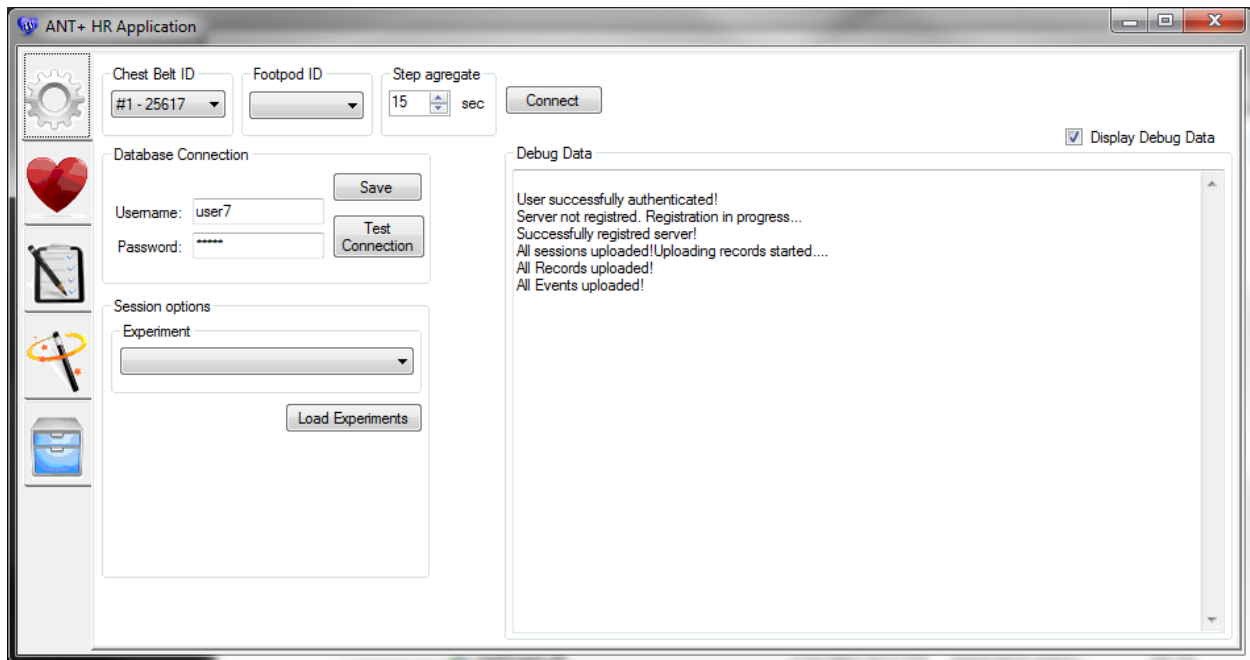


Figure 1 Settings Tab

The ANT+ sensor(s) can be connected by clicking the “Connect” button. A summary and brief description of each setting is provided below.

Chest Belt ID – Choose the device number of the Heart Rate Monitor to connect to the application.

Footpod ID – Select the device number of the Foot Pod to connect to the application.

Step Aggregate – Controls the length of the time interval that the number of steps taken is updated.

Database Connection – Enter in a valid mHealth data server username and password. The user may save their login information by clicking the “Save” button, and test the connection to the mHealth data server using the “Test Connection” button.

Session Options – The user can associate the recording session with a specific experiment. The user cannot create experiment categories, however.

Debug Data – This window displays debug information from the application. Debug information can be turned on or off by checking or unchecking the “Display Debug Data” checkbox located just above and to the right of the debug display.

2.2 Current HR

The *Current Heart Rate* tab, shown below in Figure 2 displays a person’s Heart Rate, the number of step and cadence on a graph. In addition, the tab indicates the number of packets lost and the total time of the recording. Recording sessions can also be started or stopped by clicking the “Connect” (Disconnect) button.



Figure 2 Current Heart Rate

2.3 Activity

From the *Activity* tab, shown below in Figure 3, the user is allowed to add or remove events that occur during a recording session. Events may only be added or removed during a recording session.

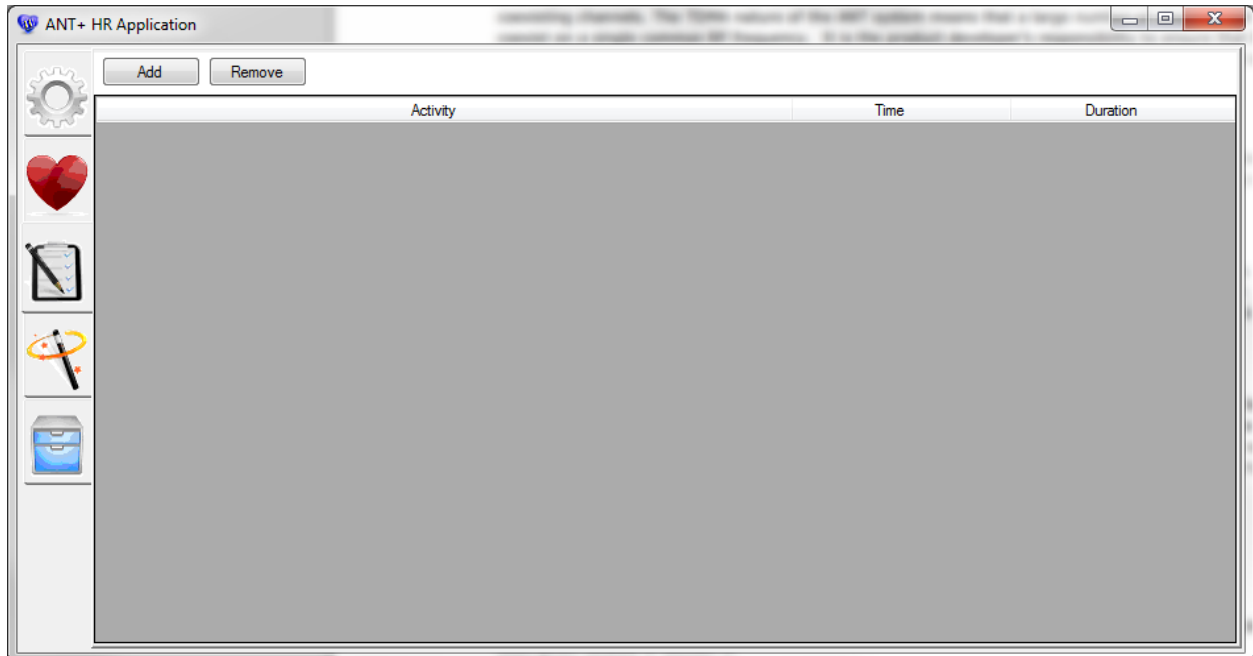


Figure 3 Activity Tab

To add an activity, click the “Add” button. In the window that appears, shown in Figure 4, enter in a name for the activity. Click “Save” to add the activity to the list or “Cancel” to close the window without adding the activity.

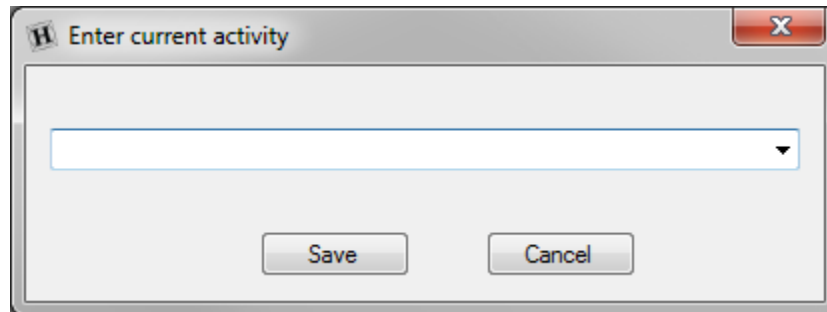


Figure 4 Prompt to Enter Name of Activity

To remove an activity, simply click the activity, and then click the “Remove” button.

2.4 HR vs HRV

From the *Heart Rate versus Heart Rate Variability* tab, a graph of heart rate variability is displayed while recording. The graph plots a person’s R to R intervals versus the difference between the person’s current R to R interval and the previous one. This tab is shown in Figure 5 below.

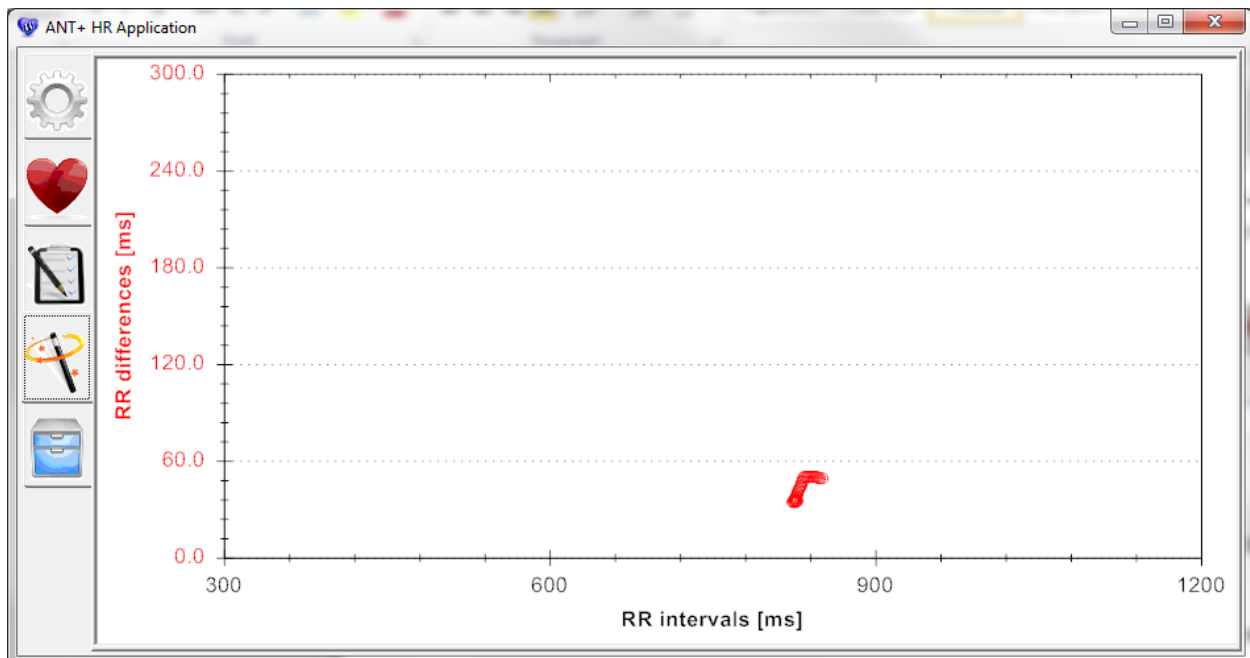


Figure 5 Heart Rate versus Heart Rate Variability

2.5 Recorded Sessions

From the *Recorded Sessions* tab, the user is able to view data from a previous recording, both from the mHealth data center and local text files. When data is loaded, it appears as in Figure 6 below. The displayed data contains heart rate, steps, and cadence, as well as any activities associated with the data during recording.

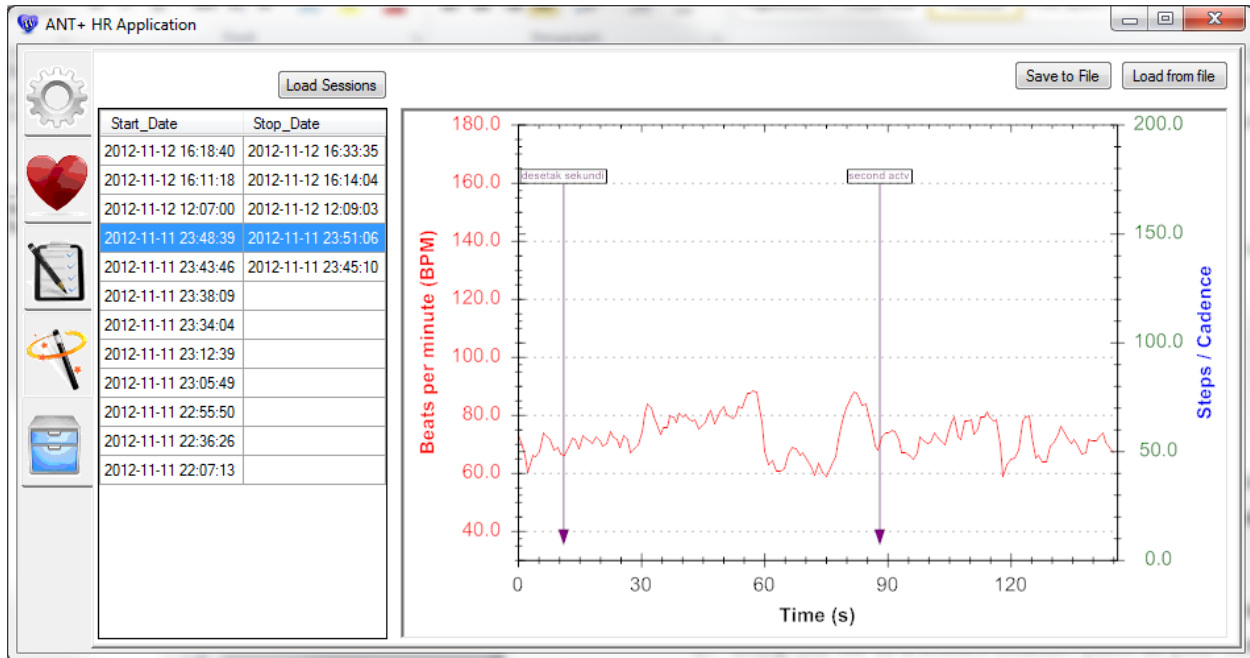


Figure 6 Recorded Sessions Tab

To display data from the mHealth data server, click “Load Sessions,” then double-click on a session to display it on the graph. To save the displayed data to a text file, click “Save to File.” To display data directly from a text file, click “Load from File” and choose a text file to display.

3 ANT+ USB Stick Driver Installation

This application requires the use of an ANT USB Stick to receive data from the sensors. When the USB stick is plugged into the computer, it may not install the driver. If the device driver is not installed upon plugging in the device, perform the following steps. Note that driver installation requires administrative privileges.

1. The driver for the ANT+ USB stick is included with the application downloadable at: <http://146.229.164.12/public/index.php/mhealth-ant-pc-application> listed as “ANT+ PC Application”
2. Unzip the file to a known location (such as your home folder)
3. Press the [Windows Key]+R, then type *compmgmt.msc* at the prompt.
4. Navigate to the *Device Manager*.

5. Navigate to *Other Devices*.
6. Right-click *Other Devices*, and select *Update Driver Software...*
7. Choose *Browse My Computers for Driver Software*
8. Navigate to the location of the driver from step 2; select the folder named "Drivers" and click Okay. This should install the driver.