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Gait Research Data Viewer

User's Manual

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Preface

This paper describes the Data Viewer version 1.0 of Gait Research System Software (further *Viewer*). The Manual will explain the Viewer main set of functions and tools as well as its' usage.

1. Viewer Features

The application features include the following functions:

- Opening file of two types. The first type is a raw data file, which Pocket PC records as a result of data acquisition. The second type is a derived data file that is produced by Viewer from a raw data file.
- Converting a raw data file into a derived data file for further processing.
- Data visualization, including zooming and synchronization of data from the left and the right legs in time and amplitude.
- Selecting a block of data by mouse or manual input.
- Saving all data or any selected block of data in a new file.

Below all these features are described in detail.

2. File Types and File Conversion

Any source file contains auxiliary information about the measurement conditions as well as personal and technical data. All this auxiliary information is not necessary for data analysis. Raw data files recorded on Pocket PC have the extension '.ins'. Converted, derived data files have the extension '.mir'.

Since derived data files do not contain anything except data, it is possible to merge the set of those files into a single file.

It is possible to split a single '.mir' file into two or more files. Viewer provides convenient means for doing this operation.

Note that for valid data file all data that represent force values for each sensor must be non-negative and belong to the range [0...1023].

3. Viewer Items

The screenshot of Viewer window is shown in the Fig.1.

The callouts show:

- Window title bar contains the name of a loaded file.
- Main menu bar includes three items: **File**, **Edit**, and **View**. By clicking these items the user gets access to the corresponding drop-down menus.
- Under the menu bar there are two panels for the left and right data charts. Each panel includes two axes: the vertical axis is the force axis that has arbitrary unit scale factor; and the horizontal one is the time axis in seconds.
- The legend rectangle located at the right side of the chart area shows current color assignments.

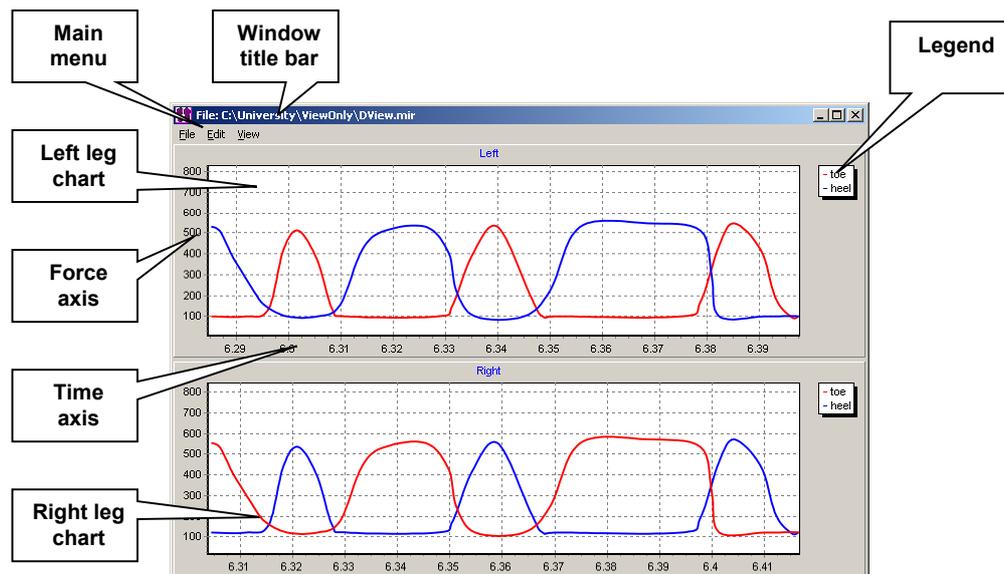


Fig1. Main application window screenshot

4. Application Menu Items

4.1. «File» Menu



This menu contains of three operation items. “Open” and “Exit” items are always accessible and cause the appearance of “file open” dialog. The “Save” option works only when a data file was loaded.

4.1.1. «Open» Menu Item

Clicking this item will open the “Open file” dialog. This dialog can operate with three types of files corresponding to three types of file name extensions:

- “Data file” loads derived data files (file name extension ‘.mir’)
- “Raw data file” loads raw data files recorded on Pocket PC (file name extension ‘.ins’)
- “All files” filter can be used to see files of all types.

Note, that data representation inside application is independent of the data file that was loaded. When the user opens a raw data file, all data in this file are converted into derived form. The reverse conversion is not possible.

4.1.2. «Save» Menu Item

This item becomes available when some data was loaded into the application.

Clicking this item opens “Save file” dialog. It is recommended to save data with derived extension (‘.mir’).

When any part of the data file is selected in Viewer – only this selection will be saved. If the left and the right legs charts are not synchronized and different selections were made for the charts, only the common part of both charts will be saved. Use «x Synch» synchronizing option before saving data, or use “Selection” dialog to avoid ambiguity.

4.1.2. «Exit» Menu Item

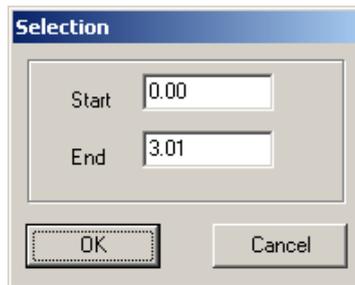
The “Exit” operation closes the program. There is no warning of any data loss, because in any case Viewer does not modify raw data files.

4.2. «Edit» Pop-up Menu

Select block... This main menu item becomes available, when any data file is loaded. Currently this drop-down list contains only one item “Select block”.

4.2.1. «Select block» Menu Item and «Selection» Dialog

This item opens “Selection” dialog. This dialog has two edit windows that define the time interval (in seconds). The values are rounded to hundredth of a second.



The same selection can be done using the mouse, as described below. Using “Selection” dialog has its advantages: it guarantees that selections for left and right legs will correspond to the same time interval, independently of “x Synch” state; and it provides ability to select time limits very accurately.

4.3. «View» Pop-up Menu

✓ x Synch
✓ y Synch
Zoom off This menu includes three items about data selection viewing. “x Synch” and “y Synch” are locking the zooming properties of the left and the right leg charts, and “Zoom off” option allows zoom abolishing.

4.3.1. «x Synch» Menu Item

Clicking this item will switch ON and OFF the location and scale locking of left and right leg charts in time. Synchronized viewing is more comfortable for exposing the differences between the legs. The tick near the menu item shows the current state of this option.

4.3.2. «y Synch» Menu Item

Clicking this item will switch ON and OFF the location and scale locking of left and right leg charts in amplitude. Synchronized viewing is more comfortable for exposing the force differences between legs. The tick near the menu item shows the current state of this option.

4.3.3. «Zoom off» Menu Item

Clicking this item will cancel any zoom operations in charts. All data will become visible simultaneously, as it was when file has been initially loaded.

5. Mouse Operations

The mouse allows user to zoom and un-zoom operations quickly. Charts can be zoomed by dragging the mouse with the left button pressed. In order to view a specific chart area in detail the user has to draw a rectangle around this area. The left mouse button must be pressed to define the rectangle around zoomed area.

The behavior of the opposite chart depends on states of “x Synch” and “y Synch” properties. Note, that dragging should be done from top/left to bottom/right. Dragging in the opposite direction zoom off the charts.