Input-Corrective Drawing Pad User Manual

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Date	Version Number	Document Changes
11/05/2018	0.1	Initial Draft
11/13/2018	1.0	Added missing sections fixed errors

Table of Contents

1 Introduction

This document provides guidance which is intended to assist the user of the Input-Corrective Drawing Pad in utilizing its features. It is also a useful reference for questions that may arise during the device's use.

1.1 USE OF THIS DOCUMENT

The Introduction overviews the purpose and general use of the Input-Corrective Drawing Pad.

The remaining sections constitute specific processes to be followed and stand as a reference for individual steps.

The information in this document is not necessarily exhaustive. Reference to additional resources and user manuals will be included in this document in the 'Related Documents' section(1.3).

The Input-Corrective Drawing Pad will alternatively be referenced as 'the Drawing Pad' throughout this document

1.2 FUNCTION OF THE INPUT-CORRECTIVE DRAWING PAD

The Input-Corrective Drawing Pad is a drawing tablet designed to help users with fine motor skill challenges to write and draw with minimal error. It aids in this goal by implementing several features:

- Handwritten text recognition
- Line smoothing
- User error recognition and correction

1.3 RELATED DOCUMENTS

The document 'Raspberry Pi User Guide' presents an overview of the installation, maintenance, troubleshooting, and schematics of the raspberry pi processor used for the Drawing Pad. Additionally, references to the Raspbian Operating System, which the Drawing Pad uses, is included in this documentation.

2 OVERVIEW

The Input-Corrective Drawing Pad corrects user drawings or writing. If the user inputs writing, the Drawing Pad also outputs recognized text to the textbox on screen.

The Drawing Pad contains three main hardware modules: the processor, the touchscreen, and the stylus. The user inputs data (in the form of writing or drawing) with the stylus onto the touchscreen. The stylus sends pressure-sensitivity data to the processor which it then combines with input coordinate data from the touchscreen. The processor then executes software to accomplish handwriting recognition and/or error correction. The result of the software is then output onto the touchscreen.

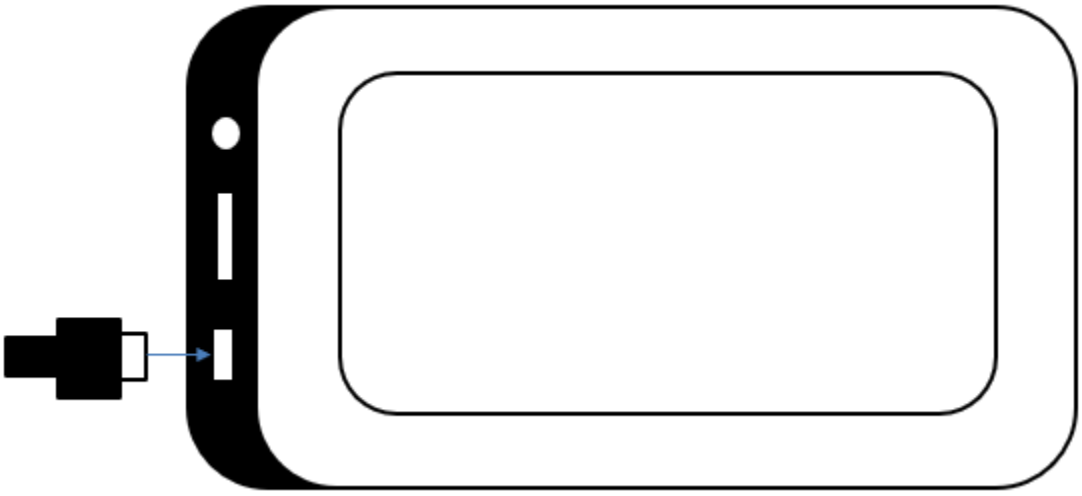
3 Directions for Use

3.1 Turning On the Device

3.1.1 Turning on the Device with Battery

Flip the switch on the bottom of the Drawing Pad. Wait for approximately 40 seconds until the desktop appears as seen in Figure 1.

Figure 1. Connecting the device directly to power (no battery charge)



3.1.2 Turning on the Device While Plugged in

Plug in the device into the port on the left side of the device as shown in Figure 3. The device will automatically turn on and stay activated while it is connected to power.

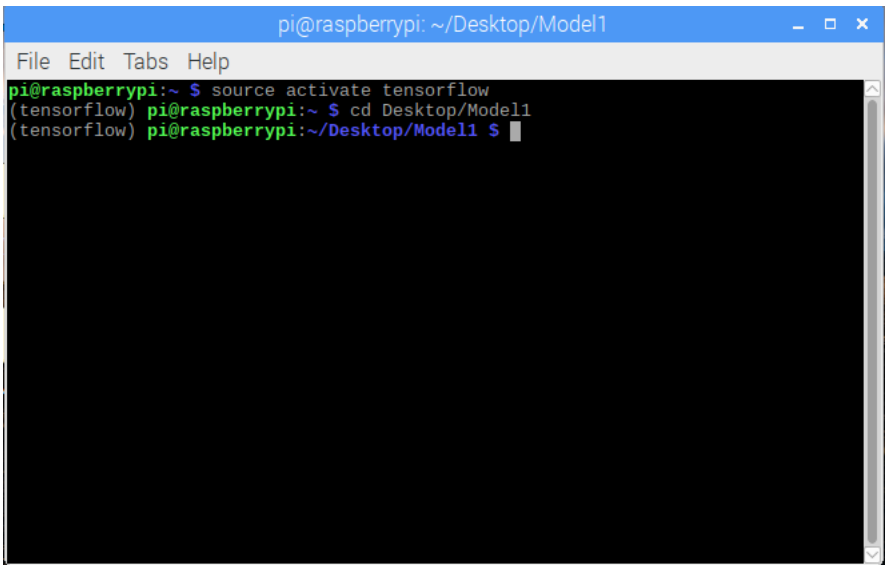
3.2 Starting the Software

Open a command terminal by tapping the black box in the top left-hand corner of the screen as shown in Figure 1.

Figure 1. Desktop view of terminal icon

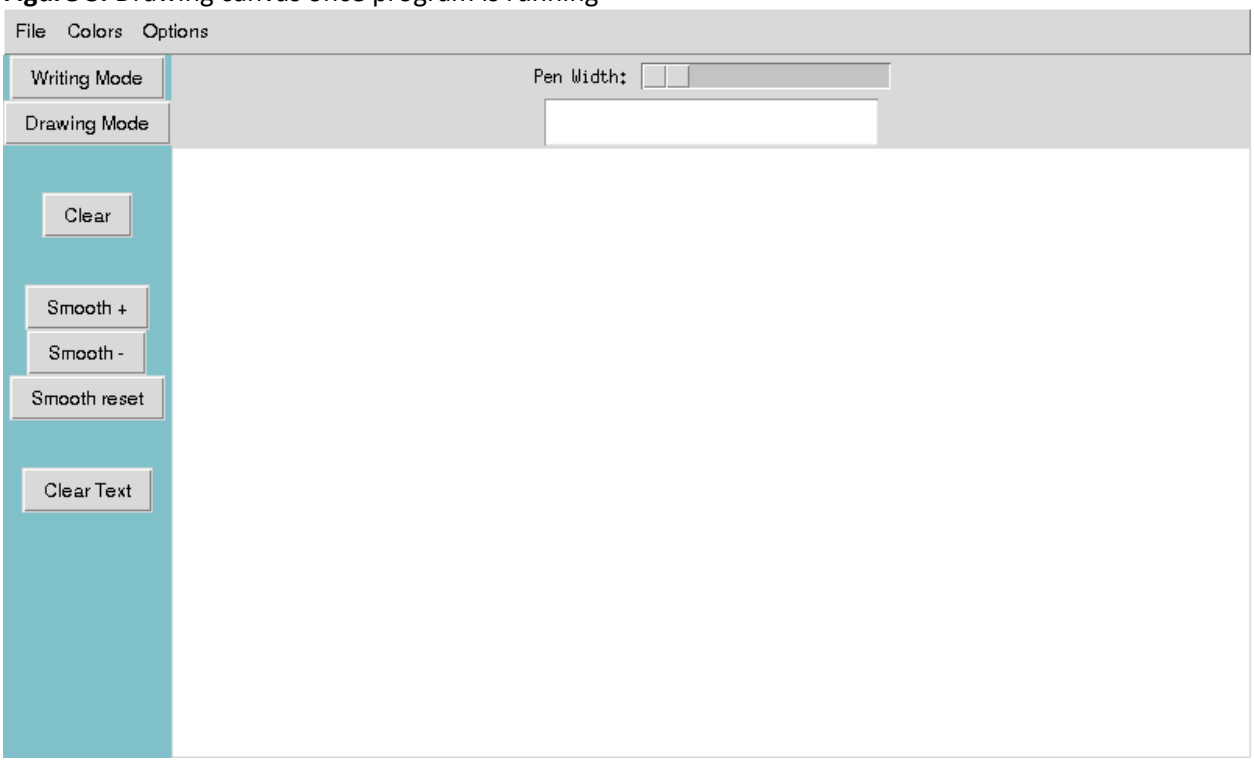
Using a keyboard, type the command “source activate tensorflow” and press Enter. Wait until a new command line appears, preceded with the text “(tensorflow)”. Type “cd Destkop/Model1” and press Enter, as shown in Figure 2.

Figure 2. Activating the environment and navigating into the correct folder



On the next command line, type “python DrawGUI.py”. Wait until the canvas appears as shown in Figure 3.

Figure 3. Drawing canvas once program is running



3.3 Converting Writing to Text

Click on the button titled “Writing Mode”, which will activate handwritten text and number recognition. Draw the character to be printed as text. Wait for 2 seconds for the text to be output to the textbox. The color of the brush and background of the canvas may be changed by following the steps outlined in sections 3.3.1 and 3.3.2

3.4 Drawing pictures

First, ensure that the Drawing Pad is in Drawing Mode by tapping the ‘Drawing Mode’ button at the top of the screen. Then, draw the desired picture to the screen. Drawings will appear to smooth and correct after each stroke.

3.3.1 Changing the color of the brush

1. Tap the ‘Colors’ menu on the top, left-hand corner of the screen.
2. Tap ‘Change Brush Color’.
3. Select the color desired by tapping and dragging the red, green, and blue slider bars.

3.3.2 Changing the color of the background

1. Tap the ‘Colors’ menu on the top, left-hand corner of the screen.

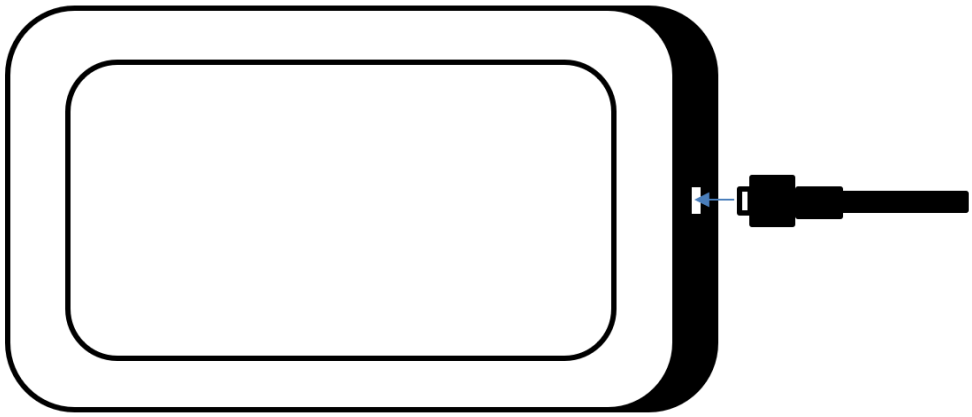
2. Tap ‘Change Background Color’.

3. Select the color desired by tapping and dragging the red, green, and blue slider bars.

3.5 Charging the Device

Insert USB-Micro cable into the side of the Drawing Pad as seen in Figure 3. The Drawing Pad must be plugged in for approximately 5 hours to fully charge. A green light will shine through the charging port when the battery is fully charged.

Figure 4. Charging the battery



3.5.1 Using the Device While Plugged in

The Drawing Pad may be used while the battery is charging by plugging in to the charging port shown in Figure 2. Alternatively, the device may be powered by plugging in the raspberry pi directly. This can be seen in Figure 1. As soon as the device is unplugged from this port, the device will lose power unless battery power is activated with the switch.

4 User Safety Recommendations

Keep away from water.

Discontinue use if any copper wires become exposed.