Getting Started with the

Perfect-Track

THE SOFTWARE VERSION OF A CAMERAMAN

Contents

About This User Manual

The Perfect Track is a program used to control PTZ cameras via tracking methodologies implemented by VDO360 LLC. You can use the system to autonomously track any user as they move around a designated workspace.

The Perfect Track is distributed on the Windows 10 operating system within an Intel® NUC mini-PC.

Software distributions on custom hardware configurations are available upon request. Please contact autopilot@vdo360.com for inquiries.

Organization

The user manual for the Perfect Track is organized in the following manner: setup instructions, getting started, troubleshooting, and index. This guide will provide examples of how to fully utilize the Perfect Track solution for any supported PTZ Camera. It will ultimately eliminate the need for manual camera operators and will allow the user to do more with less.

Assumptions

The Perfect Track program is designed to work under the following assumptions:
1) Hardware Requirements:
   A Pan-Tilt-Zoom (PTZ) Camera that runs on the Sony VISCA Protocol
   A Power Cable for the PTZ Camera
   Cables from PTZ Camera to the *Intel® NUC*   :

   8-Pin DIN to DB9 Connector [for RS-232]
   RS-232 to USB adaptor
   USB 3.0 Video Cable- use a direct USB 3.0 A/B cable to the USB 3.0 port on the NUC

Mouse, Keyboard, and Monitor (for initial setup)

Video output from the camera will be from the DVI/HDMI output (which can be changed to USB 3.0 using an HDMI video capture device such as the Hornettek HT-VC01), or if your camera has an SDI output, directly from that.

Conventions

When reading through the user manual, certain conventions may be used to dictate label identification, suggestions, and action buttons. Please follow the format below when going through the procedures in the remaining documentation:

1) *'Labels'* -> are italicized and held within single quotation marks
2) (Suggestions) -> are held within parenthesis
3) [Action Buttons] -> are held within brackets

The Perfect Track Setup

This portion of the user manual gives an overview of some basic tracking concepts and shows you how to set up the Perfect Track. By replicating the most ideal working environment and following the steps below, the Perfect Track will reliably track any user around a workspace.

Setting up the Working Environment

Setting up the working environment properly for the Perfect Track system directly correlates to the success rate of tracking and training with the system. It is advised that users try to adhere to the guide below to obtain the best results before contacting Perfect Track product support specialists.

Lighting Conditions

The Perfect Track is designed to work best in evenly lit presentation areas. Bright, dispersed overhead lighting would exhibit the most ideal scenario. Centralized, multi-angle light sources provide uneven shadow effects on presenters which will ultimately negatively affect the facial detection.

To obtain the best results:

1) Place a subject to track in the working environment.
2) Visually determine if there are any uneven shadow effects.
3) Have the subject walk across the entirety of the permitted walking area.
4) While the subject is walking around, observe and note any uneven lighting.
5) Place appropriate lighting sources to eliminate these unwanted shadows as best as possible.

Foreground Conditions

Pan, Tilt, Zoom movements are determined by the ability of the Perfect Track to visualize an approximate user to track. In order for this visualization to take place, the system must have an unobstructed view to the tracking subject. Therefore, no person or object must stand between the direct sight of the PTZ camera and person of interest (for an extended period of time) [1-2 seconds].

To obtain the best results:
1) Place a subject to track in the working environment.
2) Allow the subject to move around the working environment.
3) Determine allowed forward walking distance from the camera.
4) Provide the subject with instructions to generally stay in an unobstructed view from camera.

Background Conditions

Although the Perfect Track relies heavily on foreground conditions, background conditions also play a factor into determining tracking reliability. One portion of the tracking mechanism implemented by the Perfect Track is based on motion tracking. When the system is unable to detect a face it relies on movement to track the position of the last detected face.

High contrast, non-uniform, and multi-edged backgrounds tend to provide the least reliability when tracking based solely on motion analysis. Uniform backgrounds provide the best reliability.

To obtain the best results:
1) Determine the working environment area.
2) Remove unnecessary objects around the presentation area.

Setting up Preferences

Once the working environment has been properly set up, the next step is to configure the Perfect Track to work with a specific camera.

To access the System Preferences:

1) Left-click on the ['*Preferences'*] button on the top-right of the Web Client Interface.

2) Make any changes necessary on the '*System Preferences'* page.

3) Left-click on the [*'Save'*] button to apply all changes or on the [*'Back'*] button to reset all settings to their previous values.
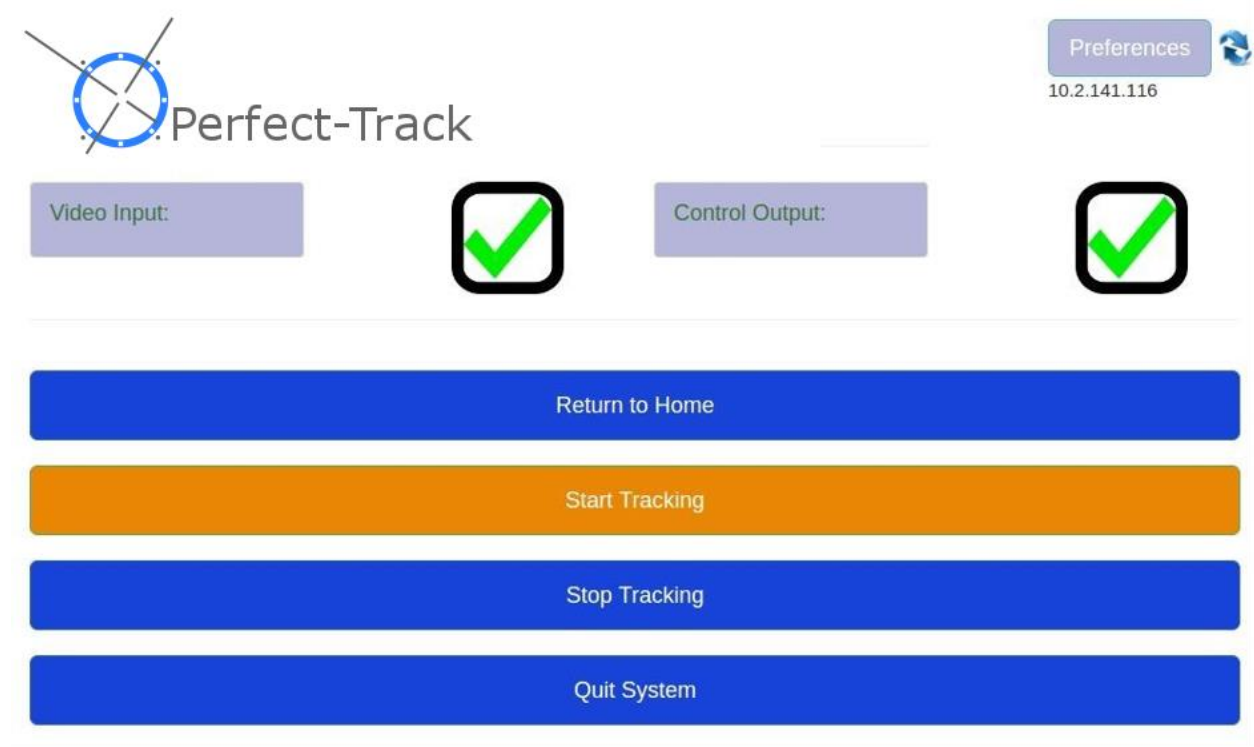
System Preferences

Local IP Address:	10.2.141.116
Select Camera Model:	Saber 12X
Return To Home:	20 Seconds

| Disable Tilt | Disable Zoom |

Set Home Position

Check for Update

| Back | Save |

Getting Started

This chapter provides a brief introduction to performing basic Perfect Track operations.

Starting the Perfect Track

The Perfect Track system is automatically loaded on startup of the Host machine and can only be launched from the Host machine. The program can also be manually relaunched via its Desktop Icon or Panel Icon Launcher on the Host machine.

Currently an ethernet connection _MUST BE_ present in order for a Client machine to access the Perfect Track functionality remotely, however the Host machine can run independently without any ethernet connection.

To start the Perfect Track manually (on the Host machine):

1) Left-click on either the [*'Perfect Track'*] Desktop icon or panel icon located on the left-hand panel. Any existing Perfect Track sessions still running will automatically be shut down and a new session will now start.

2) Approximately five seconds after the launcher has been clicked, the Perfect Track will display a minimized, analytical video display of the connected PTZ camera's output (if connected).

3) All functionality of the Perfect Track is now ready to be used.

Preset Positions

The ability to set important, often-used positions ahead of time is a must of any tracking software. Within the Perfect Track is this built-in feature to set a customized Home position. The Home position will act as the exact point where the camera will default to when a user is lost from the tracking area, when a face has not been detected after a specified amount of time while tracking is turned on, and when the Perfect Track is properly shut down.

To use the preset Home position:

1) First, set the Home position by:
   a) Turning tracking off if initially set to tracking on.
   b) Manually move the camera to the desired PTZ Home position with the camera's remote or joystick.
   c) Then, left-clicking on the [*'Preferences'*] button on the Web Client Interface.
   d) Finally, left-clicking on the [*'Set Home Position'*] button and clicking the [*'Save'*] button.

2) Then, go to the Home preset position by:
   a) Left-clicking on the [*'Return to Home'*] button on the Web Client Interface.

Tracking Feature

The main feature of the Perfect Track system is its ability to track any user around a given area. By sending positional information over to the connected PTZ camera, pan, tilt, and zoom control is handled autonomously.

To use the tracking feature:

1) Left-click on the [*'Start Tracking'*] button on the Web Client Interface to start tracking.

2) Left-click on the [*'Stop Tracking'*] button on the Web Client Interface to stop tracking.

3) Repeat steps 1-2 as needed.

Exiting the Perfect Track

There exists multiple ways to exit and/or restart the Perfect Track system.

To exit from the Host machine:
1) Click on the window close button on the top-left of the Web Client Interface window.
2) Click on the [*'Quit Program'*] button on bottom of the Web Client Interface window.
3) Select the *'Shutdown'* option from the Settings menu on the top-right of the monitor.
4) Hold down the Power button on the Computer for three to five seconds.

To exit and restart from the Client machine:
5) Click on the [*'Restart Program'*] button on bottom of the Web Client Interface window.

Troubleshooting

Web Client Interface Dialog Error Messages

1) *Perfect Track System is not connected! Please turn on system and check connectivity before continuing.*
    - **On Host**: Make sure that if an ethernet connection is hard-wired into the Perfect Track System that the connection is live (there is active internet connectivity).
    - **On Client**: Make sure that the Host is fully done booting up. May take 1-2 minutes from boot-up/restart initiation.

2) *Could not connect to RS232 Serial Port. Please check USB connection before continuing.*
    - **On Host**: Make sure that the provided RS232 Serial to USB cable is fully inserted into a USB 3.0 slot on the Intel® NUC.

3) *Invalid License: Please contact Customer Support!*
    - There is an invalid license associated with the Host machine. Please contact customer support immediately to resolve the issue.

4) *No internet connectivity detected. Please connect to the internet before checking for updates!* ● **On Host**: Make sure that there exists an active internet connection.

Miscellaneous Problems

5) Camera movement is sporadic or very slow and loses track of the subject often.
   - Check that the appropriate camera is selected on the System Preferences page.

6) The connected PTZ camera is not moving.
   - Check that the Control Output status icon shows a green checkmark. If it does not:
   - Check that the RS232 serial cable is securely connected between the PTZ camera and the Intel NUC.
   - Check that none of the pins on the RS232 connector are bent.
   - Check that the *Start Tracking* button has been activated.
   - Check that the appropriate camera is selected on the System Preferences page.

7) Video Input status shows a red X and/or the video feed does not appear at all.
   - Check that all the video cable connections between the camera and computer are securely connected on both ends.
   - Check that the camera power cable is plugged into the power socket and that the socket has active power.
   - Check that the power switch to the camera has been turned on.
   - Click the refresh button or the Dycap logo on the top of the Web Client Interface. Wait 30 seconds and click on the refresh button or Dycap logo again. The video status may take up to 30 seconds to properly refresh.
   - *Advanced*: If there is **still no video feed** showing up, try cycling on/off the cables on the camera.

8) Video feed will not close when running the program.
   - The analytical video feed cannot be permanently closed. Do not be alarmed.

Problem not listed?

If there is a problem not listed above that has occurred, please send a ticket request to the customer support department below.

Perfect-track
Customer Support Specialists
autopilothelp@vdo360.com

Glossary

- Client - References the machine that acts as a remote unit for the Host machine. This machine can control the Perfect Track remotely if the Host and Client are on the same Local Area Network (LAN) via hard-wired ethernet cables.

- Host - References the machine that acts as the main control/tracking unit for a connected PTZ camera. The Perfect Track system must first be launched on this machine before a Client can remotely connect and control it.

- Intel® NUC - The mini-PC that Hosts the Perfect Track System. Includes 4GB pre-installed RAM and a 60GB SSD by default. (***Current Model***: NUC5i3RYH)

- Perfect Track - A PTZ Camera Tracking Program licensed by VDO360 LLC. (***Current Version***: 3.0.0)

- PTZ - Stands for Pan-Tilt-Zoom. References three-axis motorized control movement.

- RS232 - A serial communication protocol used widely in the Audio/Visual (A/V) industry to control PTZ cameras.

- Visca - A packet structure/protocol developed by Sony and used widely in the A/V industry to control PTZ Cameras.