OCR Name Tag Reader for Safety & Security in Public Places
User Guide

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1. **Minimum requirements**:
   a. Hardware (BOM):
      i. A webcam with FHD 1080, auto-focus, USB2.0
      ii. A laptop, Intel i5 or i7, gen 8 or later with 8GB memory or more
   b. Software/ OS:
      i. Windows 10, Home or better
      ii. Intel OpenVINO toolkit latest version 2020.4.287. Please follow instruction to install all dependencies if you haven't done so. The instruction is at https://docs.openvinotoolkit.org/2020.4/openvino_docs_install_guides_installing_openvino_windows.html
      iii. Python 3.7.x or later. This program application has been built and tested with version 3.7.4
         1. This is the link to download to install if you don't have it yet. https://www.python.org
         2. Once the installation is done, please use PIP to install additional python modules below:
            - Pip install imutils
            - Pip install playsound
            - Pip install pandas
      iv. OCR Name Tag Reader application software
         1. Unzip the software package to the OpenVINO folder that has been installed. Below is an example after unzipping: C:\Intel\IntelSWTools\openvino_2020.4.287\superhero_challenge
         2. Application folder is under the "superhero_challenge" directory as below: C:\Intel\IntelSWTools\openvino_2020.4.287\superhero_challenge\OCR_NameTag_Reader
2. **Code structure**:
   a. This application software has a structure below:

audios	9/3/2020 12:19 PM	File folder	
common	8/19/2020 12:42 PM	File folder	
Image_logs	8/31/2020 3:00 PM	File folder	
Logs	8/30/2020 9:12 PM	File folder	
models	8/22/2020 11:28 AM	File folder	
text_detection	8/19/2020 12:42 PM	File folder	
videos	8/25/2020 12:44 PM	File folder	
OCR Name Tag Reader Application se...	9/3/2020 5:46 PM	Microsoft Edge PD...	387 KB
ocr_nametag_reader.py	9/3/2020 12:40 PM	Python File	21 KB
requirements.txt	9/3/2020 12:26 PM	Text Document	1 KB
run_OCR_NameTag_RealTime.bat	9/1/2020 4:55 PM	Windows Batch File	1 KB
run_OCR_NameTag_Video.bat	9/1/2020 1:07 PM	Windows Batch File	1 KB

b. Where:

  i. Audios folder: consists of a sound file "thankyou.wav". It is played as an indicator each time the inference process successfully extracts the name from a name tag.

  ii. Common: consists of required files from OpenVINO toolkit

  iii. Image_logs: the OCR Name Tag Reader application will store a labeled image here for each successful name extraction for a record

  iv. Logs: the OCR Name Tag Reader application will store an updated record file in csv format that contains list of names since that last time the application started. A new file will be generated each time a new name is extracted as a backup. This has a basic record structure to demonstrate the capabilities of the application

  v. Models: consists of the Intel pretrained text spotting and recognizing models

  vi. Text_detetion: consists of helper codes to handle image processing and displaying the masks and text labels. These codes utilize the OpenVINO toolkit

  vii. Videos: consists of a test video that contains the test name tags. This video serves the software testing during the development and validation before running with live camera test.

  viii. OCR Name Tag Reader application setup diagram file shows how to get the test or application environment setup adequately and ready to use

  ix. OCR_nametag_reader.py is the core of application code. It takes the images from the webcam or video file and key parameters specified in the command line. It performs image processing, inference of text detection to locate the name tag and then to recognize the text to yield the results. The texts are both labeled on the detected name tag image as well as properly extracted for

first name and last name order. Each name is added to the record list along with time stamped. The labeled image is also stored in the "image_logs" folder. Finally, the application plays a "thank you" voice to indicate a successful name tag read.

   x. Requirements.txt consists of additional python modules needed for this application. If these modules have not been installed, then the below command can be run in the command console window to install:

      1. Pip install -r requirements.txt

   xi. Run_OCR_NameTag_Realtime.bat is used to launch the application with preset configured parameters for live camera video source. For a simplification to demonstrate this application and for other users to replicate on their laptops, the command prompt console window is used to run test and to display the messages. Below are the steps to run the application.

      1. Change directory to the OpenVINO bin folder to initialize the environment variable once. This is needed every time opening a new command prompt console window
Cd C:\Intel\IntelSWTools\openvino_2020.4.287\bin

      2. Run the command **setupvars**

      3. Change the directory to the application
Cd C:\Intel\IntelSWTools\openvino_2020.4.287\superhero_challenge\OCR_NameTag_Reader

      4. Run the command **run_OCR_NameTag_Realtime**

      5. Wear a name tag and stop in front of the webcam to pose it

      6. When the application play "thank you" voice, the name tag has been read successfully.

   xii. Run_OCR_NameTag_Video.bat is used to launch the application with preset configured parameters for a pre-recorded name tag test video. The steps to prepare and to launch the application are similar to the real time case except at the step 4 where the name tag images are taken from the video file source. This batch file command is very convenient to use during the software development without the posing setup. It also can help to verify the name tag quality.

The steps to launch both of OCR Name Tag Reader in real time and via video application are also shown in the demonstration videos of this project.