

cnn-analysis-and-model

April 4, 2024

0.1 Machine Learning Model Building Pipeline: Big Data, Images and Neural Networks

In the following videos, I will take you through a practical example on how to build a Neural Network utilising a big dataset ($> 1\text{GB}$). In this notebook, we will do some data exploration, to understand what the dataset is about, and how we need to pre-process our data, to be able to use it in a convolutional neural network.

In the next videos, we will show you how to prepare the code for production and how to productionise your model.

We will then use the steps described here to write production code and deploy our model.

We will use the V2 Plant Seedlings Dataset available on [Kaggle.com](https://www.kaggle.com/vbookshelf/v2-plant-seedlings-dataset). See below for more details.

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0.2 Differentiating weed from crop seedlings

The aim of the project is to correctly identify the weed type from a variety of weed and crop RGB images.

0.2.1 Why is this important?

As taken from Kaggle website:

“Successful cultivation of maize depends largely on the efficacy of weed control. Weed control during the first six to eight weeks after planting is crucial, because weeds compete vigorously with the crop for nutrients and water during this period. Annual yield losses occur as a result of weed infestations in cultivated crops. Crop yield losses that are attributable to weeds vary with type of weed, type of crop, and the environmental conditions involved. Generally, depending on the level of weed control practiced yield losses can vary from 10 to 100 %. Therefore, effective weed control is imperative. In order to do effective control the first critical requirement is correct weed identification.”

0.2.2 What is the objective of the machine learning model?

We aim to maximise the accuracy, this is, the correct classification of the different weed varieties.

0.2.3 How do I download the dataset?

To download the House Price dataset go this website: <https://www.kaggle.com/vbookshelf/v2-plant-seedlings-dataset>

Click on the link 'train.csv', and then click the 'download (2GB)' button towards the right of the screen, to download the dataset. Unzip the folder and rename it to 'plant_train' and save it to a directory of your choice. If you save it to the same directory from where you run this notebook, then you will be able to run the code as I do in the notebook.

Note the following: - You need to be logged in to Kaggle in order to download the datasets. - You may need to accept terms and conditions of the competition to download the dataset - If you save the file to the same directory where you saved this jupyter notebook, then you can run the code as it is written here.

For the folder Shepherd's Purse, remove the ' so that it reads Shepherds Purse

```
[ ]: # to handle datasets
import pandas as pd
import numpy as np

# navigate folders
from glob import glob
import os

# for plotting
import matplotlib.pyplot as plt
%matplotlib inline

# to open the images
import cv2

# to display all the columns of the dataframe in the notebook
pd.pandas.set_option('display.max_columns', None)
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```
[ ]: # data preprocessing
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder

# evaluate model and separate train and test
from sklearn.metrics import confusion_matrix
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[ ]: import warnings
warnings.filterwarnings("ignore")
```

```
[ ]: # for the convolutional network
from keras.models import Sequential
from keras.layers import Dense, Dropout, Conv2D, MaxPooling2D, Flatten
from keras.optimizers import Adam
from keras.metrics import categorical_crossentropy
from keras.preprocessing.image import ImageDataGenerator
from keras.models import Model
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from keras.callbacks import EarlyStopping, ReduceLROnPlateau, ModelCheckpoint
from keras.preprocessing import image
from keras.utils import np_utils

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0.3 Load Images / Data

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[ ]: # here are all our images
DATA_FOLDER = 'v2-plant-seedlings-dataset'

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ImfLineOrderAttribute.cpp
ImfLut.cpp
ImfMatrixAttribute.cpp
ImfMisc.cpp
ImfMultiPartInputFile.cpp
ImfMultiPartOutputFile.cpp
ImfMultiView.cpp
ImfOpaqueAttribute.cpp
ImfOutputFile.cpp
ImfOutputPart.cpp
ImfOutputPartData.cpp
ImfPartType.cpp
ImfPizCompressor.cpp
ImfPreviewImage.cpp
ImfPreviewImageAttribute.cpp
ImfPxr24Compressor.cpp
ImfRational.cpp
ImfRationalAttribute.cpp
ImfRgbaFile.cpp
ImfRgbaYca.cpp
ImfRle.cpp
ImfRleCompressor.cpp
ImfScanLineInputFile.cpp
ImfStandardAttributes.cpp
ImfStdIO.cpp
ImfStringAttribute.cpp
ImfStringVectorAttribute.cpp
ImfSystemSpecific.cpp
ImfTestFile.cpp
ImfThreading.cpp
ImfTileDescriptionAttribute.cpp
ImfTileOffsets.cpp
ImfTiledInputFile.cpp
ImfTiledInputPart.cpp
ImfTiledMisc.cpp
ImfTiledOutputFile.cpp
ImfTiledOutputPart.cpp
ImfTiledRgbaFile.cpp

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ImfTimeCode.cpp
ImfTimeCodeAttribute.cpp
ImfVecAttribute.cpp
ImfVersion.cpp
ImfWav.cpp
ImfZip.cpp
ImfZipCompressor.cpp
dwaLookups.cpp
IlmThread.cpp
IlmThreadMutex.cpp
IlmThreadMutexWin32.cpp
IlmThreadPool.cpp
IlmThreadSemaphore.cpp
IlmThreadSemaphoreWin32.cpp
IlmThreadWin32.cpp
ImathBox.cpp
ImathColorAlgo.cpp
ImathFun.cpp
ImathMatrixAlgo.cpp
ImathRandom.cpp
ImathShear.cpp
ImathVec.cpp
IlmImf.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\IlmImf.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\ade.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/CMakeLists.txt
alloc.cpp
assert.cpp
check_cycles.cpp
edge.cpp
execution_engine.cpp
graph.cpp
memory_accessor.cpp
memory_descriptor.cpp
memory_descriptor_ref.cpp
memory_descriptor_view.cpp
metadata.cpp
metatypes.cpp
node.cpp
communications.cpp
search.cpp

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subgraphs.cpp
topological_sort.cpp
ade.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\ade.lib
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t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\ippiw\ippiw.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
build/3rdparty/ippicv/ippicv_win/iw/CMakeLists.txt
iw_core.c
iw_image.c
iw_image_color_convert_all.c
iw_image_color_convert_rgbs.c
iw_image_filter_bilateral.c
iw_image_filter_box.c
iw_image_filter_canny.c
iw_image_filter_gaussian.c
iw_image_filter_general.c
iw_image_filter_laplacian.c
iw_image_filter_morphology.c
iw_image_filter_scharr.c
iw_image_filter_sobel.c
iw_image_op_copy.c
iw_image_op_copy_channel.c
iw_image_op_copy_make_border.c
iw_image_op_copy_merge.c
iw_image_op_copy_split.c
iw_image_op_scale.c
iw_image_op_set.c
iw_image_op_set_channel.c
iw_image_op_swap_channels.c
iw_image_transform_mirror.c
iw_image_transform_resize.c
iw_image_transform_rotate.c
iw_image_transform_warpaffine.c
iw_own.c
ippiw.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\ippiw.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.

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[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\ittnotify\ittnotify.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/ittnotify/CMakeLists.txt
    ittnotify_static.c
    jitprofiling.c
    ittnotify.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\ittnotify.lib
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directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\libjpeg-turbo\libjpeg-
turbo.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/libjpeg-turbo/CMakeLists.txt
    jcapimin.c
    jcapistd.c
    jcccoefct.c
    jcccolor.c
    jcdctmgr.c
    jchuff.c
    jcicc.c
    jcinit.c
    jcmaintct.c
    jcmarker.c
    jcmaster.c
    jcomapi.c
    jcparam.c
    jcphuff.c
    jcprepct.c
    jcsample.c
    jctrans.c
    jdapimin.c
    jdapistd.c
    jdatadst.c
    jdatasrc.c
    jdcoefct.c
    jdcolor.c
    jddctmgr.c
    jdhuff.c
    jdicc.c
    jdinput.c
    jdmainct.c
    jdmarker.c
    jdmaster.c

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jdmerge.c
jdphuff.c
jdpostct.c
jdsample.c
jdtrans.c
jerror.c
jfdctflt.c
jfdctfst.c
jfdctint.c
jidctflt.c
jidctfst.c
jidctint.c
jidctred.c
jquant1.c
jquant2.c
jutils.c
jmemmgr.c
jmemnobs.c
jaricom.c
jcarith.c
jdarith.c
libjpeg-turbo.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\libjpeg-turbo.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
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directory or Output directory cannot reside under the Temporary directory as it
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python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\openjpeg\openjp2\libopenjp2.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/openjpeg/openjp2/CMakeLists.txt
thread.c
bio.c
cio.c
dwt.c
event.c
ht_dec.c
image.c
invert.c
j2k.c
jp2.c
mct.c
mqc.c
openjpeg.c
opj_clock.c
pi.c

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t1.c
t2.c
tcd.c
tgt.c
function_list.c
opj_malloc.c
sparse_array.c
libopenjp2.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\libopenjp2.lib
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directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\libpng\libpng.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/libpng/CMakeLists.txt
png.c
pngerror.c
pngget.c
pngmem.c
pngpread.c
pngread.c
pngrio.c
pngtran.c
pngutil.c
pngset.c
pngtrans.c
pngwio.c
pngwrite.c
pngwtran.c
pngwutil.c
intel_init.c
filter_sse2_intrinsics.c
libpng.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\libpng.lib
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could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\protobuf\libprotobuf.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/protobuf/CMakeLists.txt
any_lite.cc
arena.cc

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arenastring.cc
extension_set.cc
generated_message_util.cc
implicit_weak_message.cc
coded_stream.cc
io_win32.cc
strtod.cc
zero_copy_stream.cc
zero_copy_stream_impl.cc
zero_copy_stream_impl_lite.cc
map.cc
message_lite.cc
parse_context.cc
repeated_field.cc
repeated_ptr_field.cc
bytestream.cc
common.cc
int128.cc
status.cc
stringpiece.cc
stringprintf.cc
structurally_valid.cc
strutil.cc
wire_format_lite.cc
any.cc
descriptor.cc
descriptor.pb.cc
descriptor_database.cc
dynamic_message.cc
extension_set_heavy.cc
generated_message_reflection.cc
tokenizer.cc
map_field.cc
message.cc
reflection_ops.cc
substitute.cc
text_format.cc
unknown_field_set.cc
wire_format.cc
libprotobuf.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\libprotobuf.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\libtiff\libtiff.vcxproj]

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Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/libtiff/CMakeLists.txt

tif_aux.c
tif_close.c
tif_codec.c
tif_color.c
tif_compress.c
tif_dir.c
tif_dirinfo.c
tif_dirread.c
tif_dirwrite.c
tif_dumpmode.c
tif_error.c
tif_extension.c
tif_fax3.c
tif_fax3sm.c
tif_flush.c
tif_getimage.c
tif_jbig.c
tif_jpeg_12.c
tif_jpeg.c
tif_luv.c
tif_lzma.c
tif_lzw.c
tif_next.c
tif_ojpeg.c
tif_open.c
tif_packbits.c
tif_pixarlog.c
tif_predict.c
tif_print.c
tif_read.c
tif_strip.c
tif_swab.c
tif_thunder.c
tif_tile.c
tif_version.c
tif_warning.c
tif_webp.c
tif_write.c
tif_zip.c
tif_zstd.c
tif_win32.c
tif_stream.cxx

libtiff.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\libtiff.lib

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof

t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate directory or Output directory cannot reside under the Temporary directory as it could lead to issues with incremental build.

[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-python_skbuild\win-amd64-3.6\cmake-build\3rdparty\libwebp\libwebp.vcxproj]

Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/opencv/3rdparty/libwebp/CMakeLists.txt

sharpyuv.c
sharpyuv_cpu.c
sharpyuv_csp.c
sharpyuv_dsp.c
sharpyuv_gamma.c
sharpyuv_neon.c
sharpyuv_sse2.c
alpha_dec.c
buffer_dec.c
frame_dec.c
idec_dec.c
io_dec.c
quant_dec.c
tree_dec.c
vp8_dec.c
vp8l_dec.c
webp_dec.c
anim_decode.c
demux.c
alpha_processing.c
alpha_processing_mips_dsp_r2.c
alpha_processing_neon.c
alpha_processing_sse2.c
alpha_processing_sse41.c
cost.c
cost_mips32.c
cost_mips_dsp_r2.c
cost_neon.c
cost_sse2.c
cpu.c
dec.c
dec_clip_tables.c
dec_mips32.c
dec_mips_dsp_r2.c
dec_msa.c
dec_neon.c
dec_sse2.c
dec_sse41.c
enc.c
enc_mips32.c
enc_mips_dsp_r2.c

enc_msa.c
enc_neon.c
enc_sse2.c
enc_sse41.c
filters.c
filters_mips_dsp_r2.c
filters_msa.c
filters_neon.c
filters_sse2.c
lossless.c
lossless_enc.c
lossless_enc_mips32.c
lossless_enc_mips_dsp_r2.c
lossless_enc_msa.c
lossless_enc_neon.c
lossless_enc_sse2.c
lossless_enc_sse41.c
lossless_mips_dsp_r2.c
lossless_msa.c
lossless_neon.c
lossless_sse2.c
lossless_sse41.c
rescaler.c
rescaler_mips32.c
rescaler_mips_dsp_r2.c
rescaler_msa.c
rescaler_neon.c
rescaler_sse2.c
ssim.c
ssim_sse2.c
upsampling.c
upsampling_mips_dsp_r2.c
upsampling_msa.c
upsampling_neon.c
upsampling_sse2.c
upsampling_sse41.c
yuv.c
yuv_mips32.c
yuv_mips_dsp_r2.c
yuv_neon.c
yuv_sse2.c
yuv_sse41.c
alpha_enc.c
analysis_enc.c
backward_references_cost_enc.c
backward_references_enc.c
config_enc.c
cost_enc.c

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filter_enc.c
frame_enc.c
histogram_enc.c
iterator_enc.c
near_lossless_enc.c
picture_csp_enc.c
picture_enc.c
picture_psnr_enc.c
picture_rescale_enc.c
picture_tools_enc.c
predictor_enc.c
quant_enc.c
syntax_enc.c
token_enc.c
tree_enc.c
vp8l_enc.c
webp_enc.c
anim_encode.c
muxedit.c
muxinternal.c
muxread.c
bit_reader_utils.c
bit_writer_utils.c
color_cache_utils.c
filters_utils.c
huffman_encode_utils.c
huffman_utils.c
palette.c
quant_levels_dec_utils.c
quant_levels_utils.c
random_utils.c
rescaler_utils.c
thread_utils.c
utils.c
libwebp.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\libwebp.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\modules\core\opencv_core.vcxproj]
Processing OpenCL kernels (core)
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/core/CMakeLists.txt
cmake_pch.cxx
algorithm.cpp

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arithm.cpp
arithm.dispatch.cpp
array.cpp
async.cpp
batch_distance.cpp
bindings_utils.cpp
buffer_area.cpp
channels.cpp
check.cpp
command_line_parser.cpp
conjugate_gradient.cpp
convert.dispatch.cpp
convert_c.cpp
convert_scale.dispatch.cpp
copy.cpp
count_non_zero.dispatch.cpp
cuda_gpu_mat.cpp
cuda_gpu_mat_nd.cpp
cuda_host_mem.cpp
cuda_info.cpp
cuda_stream.cpp
datastructs.cpp
directx.cpp
downhill_simplex.cpp
dxt.cpp
gl_core_3_1.cpp
glob.cpp
hal_internal.cpp
has_non_zero.dispatch.cpp
kmeans.cpp
lapack.cpp
lda.cpp
logger.cpp
lpsolver.cpp
lut.cpp
mathfuncs.cpp
mathfuncs_core.dispatch.cpp
matmul.dispatch.cpp
matrix.cpp
matrix_c.cpp
matrix_decomp.cpp
matrix_expressions.cpp
matrix_iterator.cpp
matrix_operations.cpp
matrix_sparse.cpp
matrix_transform.cpp
matrix_wrap.cpp
mean.dispatch.cpp

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merge.dispatch.cpp
minmax.cpp
norm.cpp
ocl.cpp
opencl_clblas.cpp
opencl_clfft.cpp
opencl_core.cpp
opengl.cpp
out.cpp
ovx.cpp
parallel_openmp.cpp
parallel_tbb.cpp
parallel_impl.cpp
pca.cpp
persistence.cpp
persistence_base64_encoding.cpp
persistence_json.cpp
persistence_types.cpp
persistence_xml.cpp
persistence_yaml.cpp
rand.cpp
softfloat.cpp
split.dispatch.cpp
stat.dispatch.cpp
stat_c.cpp
stl.cpp
sum.dispatch.cpp
system.cpp
tables.cpp
trace.cpp
types.cpp
umatrix.cpp
datafile.cpp
filesystem.cpp
logtagconfigparser.cpp
logtagmanager.cpp
samples.cpp
va_intel.cpp
opencl_kernels_core.cpp
alloc.cpp
parallel.cpp
parallel.cpp
opencv_core.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_core481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
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could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\modules\flann\opencv_flann.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/flann/CMakeLists.txt
    cmake_pch.cxx
    flann.cpp
    miniflann.cpp
    opencv_flann.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_flann481.lib
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\imgproc\opencv_imgproc.vcxproj]
    Processing OpenCL kernels (imgproc)
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/imgproc/CMakeLists.txt
    cmake_pch.cxx
    accum.cpp
    accum.dispatch.cpp
    approx.cpp
    bilateral_filter.dispatch.cpp
    blend.cpp
    box_filter.dispatch.cpp
    canny.cpp
    clahe.cpp
    color.cpp
    color_hsv.dispatch.cpp
    color_lab.cpp
    color_rgb.dispatch.cpp
    color_yuv.dispatch.cpp
    colormap.cpp
    connectedcomponents.cpp
    contours.cpp
    convhull.cpp
    corner.cpp
    cornersubpix.cpp
    demosaicing.cpp
    deriv.cpp
    distransform.cpp
    drawing.cpp
    emd.cpp
    featureselect.cpp
    filter.dispatch.cpp

```



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floodfill.cpp
gabor.cpp
generalized_hough.cpp
geometry.cpp
grabcut.cpp
hershey_fonts.cpp
histogram.cpp
hough.cpp
imgwarp.cpp
intelligent_scissors.cpp
intersection.cpp
linefit.cpp
lsd.cpp
main.cpp
matchcontours.cpp
median_blur.dispatch.cpp
min_enclosing_triangle.cpp
moments.cpp
morph.dispatch.cpp
phasecorr.cpp
pyramids.cpp
resize.cpp
rotcalipers.cpp
samplers.cpp
segmentation.cpp
shapedescr.cpp
smooth.dispatch.cpp
spatialgradient.cpp
stackblur.cpp
subdivision2d.cpp
sumpixels.dispatch.cpp
tables.cpp
templmatch.cpp
thresh.cpp
utils.cpp
opencl_kernels_imgproc.cpp
opencv_imgproc.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_imgproc481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\features2d\opencv_features2d.vcxproj]
Processing OpenCL kernels (features2d)
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-

```

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install-0xsobkp0\opencv-python\opencv\modules\features2d\CMakeLists.txt
    cmake_pch.cxx
    affine_feature.cpp
    agast.cpp
    agast_score.cpp
    akaze.cpp
    bagofwords.cpp
    blobdetector.cpp
    brisk.cpp
    draw.cpp
    dynamic.cpp
    evaluation.cpp
    fast.cpp
    fast_score.cpp
    feature2d.cpp
    gftt.cpp
    kaze.cpp
    AKAZEFeatures.cpp
    KAZEFeatures.cpp
    fed.cpp
    nldiffusion_functions.cpp
    keypoint.cpp
    main.cpp
    matchers.cpp
    mser.cpp
    orb.cpp
    sift.dispatch.cpp
    opencv_features2d.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_features2d481.lib
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\calib3d\opencv_calib3d.vcxproj]
    Processing OpenCL kernels (calib3d)
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0\opencv-python\opencv\modules\calib3d\CMakeLists.txt
    cmake_pch.cxx
    ap3p.cpp
    calibinit.cpp
    calibration.cpp
    calibration_handeye.cpp
    checkchessboard.cpp
    chessboard.cpp

```

```

circlesgrid.cpp
compat_ptsetreg.cpp
dls.cpp
epnp.cpp
fisheye.cpp
five-point.cpp
fundam.cpp
homography_decomp.cpp
ippe.cpp
levmarq.cpp
main.cpp
p3p.cpp
polynom_solver.cpp
posit.cpp
ptsetreg.cpp
quadsubpix.cpp
rho.cpp
solvepnp.cpp
sqpnp.cpp
stereobm.cpp
stereosgbm.cpp
triangulate.cpp
undistort.dispatch.cpp
upnp.cpp
bundle.cpp
degeneracy.cpp
dls_solver.cpp
essential_solver.cpp
estimator.cpp
fundamental_solver.cpp
gamma_values.cpp
homography_solver.cpp
local_optimization.cpp
pnp_solver.cpp
quality.cpp
ransac_solvers.cpp
sampler.cpp
termination.cpp
utils.cpp
opengl_kernels_calib3d.cpp
opencv_calib3d.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_calib3d481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-

```

```
python\skbuild\win-amd64-3.6\cmake-build\modules\dnn\opencv_dnn.vcxproj]
    Processing OpenCL kernels (dnn)
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/dnn/CMakeLists.txt
    cmake_pch.cxx
    opencv-caffe.pb.cc
    opencv-onnx.pb.cc
    attr_value.pb.cc
    function.pb.cc
    graph.pb.cc
    op_def.pb.cc
    tensor.pb.cc
    tensor_shape.pb.cc
    types.pb.cc
    versions.pb.cc
    caffe_importer.cpp
    caffe_io.cpp
    caffe_shrinker.cpp
    darknet_importer.cpp
    darknet_io.cpp
    debug_utils.cpp
    dnn.cpp
    dnn_params.cpp
    dnn_read.cpp
    dnn_utils.cpp
    graph_simplifier.cpp
    halide_scheduler.cpp
    ie_ngraph.cpp
    init.cpp
    quantization_utils.cpp
    layer.cpp
    layer_factory.cpp
    accum_layer.cpp
    arg_layer.cpp
    blank_layer.cpp
    concat_layer.cpp
    const_layer.cpp
    correlation_layer.cpp
    conv_depthwise.cpp
    conv_winograd_f63.cpp
    convolution.cpp
    crop_and_resize_layer.cpp
    cumsum_layer.cpp
    detection_output_layer.cpp
    flatten_layer.cpp
    flow_warp_layer.cpp
    gather_layer.cpp
    layer_norm.cpp
```

layers_common.cpp
lrn_layer.cpp
max_unpooling_layer.cpp
mvn_layer.cpp
nary_eltwise_layers.cpp
normalize_bbox_layer.cpp
not_implemented_layer.cpp
padding_layer.cpp
permute_layer.cpp
prior_box_layer.cpp
proposal_layer.cpp
recurrent_layers.cpp
reduce_layer.cpp
region_layer.cpp
reorg_layer.cpp
reshape_layer.cpp
resize_layer.cpp
scatterND_layer.cpp
scatter_layer.cpp
shuffle_channel_layer.cpp
slice_layer.cpp
split_layer.cpp
tile_layer.cpp
legacy_backend.cpp
model.cpp
net.cpp
net_cann.cpp
net_impl.cpp
net_impl_backend.cpp
net_impl_fuse.cpp
net_openvino.cpp
net_quantization.cpp
nms.cpp
common.cpp
math_functions.cpp
ocl4dnn_conv_spatial.cpp
ocl4dnn_inner_product.cpp
ocl4dnn_lrn.cpp
ocl4dnn_pool.cpp
ocl4dnn_softmax.cpp
onnx_graph_simplifier.cpp
onnx_importer.cpp
op_cann.cpp
op_cuda.cpp
op_halide.cpp
op_inf_engine.cpp
op_timvx.cpp
op_vkcom.cpp

op_webnn.cpp
registry.cpp
tengine_graph_convolution.cpp
tf_graph_simplifier.cpp
tf_importer.cpp
tf_io.cpp
tflite_importer.cpp
THDiskFile.cpp
THFile.cpp
THGeneral.cpp
torch_importer.cpp
conv_1x1_fast_spv.cpp
conv_depthwise_3x3_spv.cpp
conv_depthwise_spv.cpp
conv_implicit_gemm_spv.cpp
gemm_spv.cpp
spv_shader.cpp
buffer.cpp
command.cpp
context.cpp
fence.cpp
internal.cpp
op_base.cpp
op_conv.cpp
op_matmul.cpp
pipeline.cpp
tensor.cpp
vk_functions.cpp
vk_loader.cpp
opencl_kernels_dnn.cpp
backend.cpp
batch_norm_layer.cpp
convolution_layer.cpp
elementwise_layers.cpp
eltwise_layer.cpp
fully_connected_layer.cpp
pooling_layer.cpp
scale_layer.cpp
softmax_layer.cpp
batch_norm_layer.cpp
convolution_layer.cpp
elementwise_layers.cpp
eltwise_layer.cpp
fully_connected_layer.cpp
pooling_layer.cpp
scale_layer.cpp
softmax_layer.cpp
opencv_dnn.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-

```

install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_dnn481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\modules\video\opencv_video.vcxproj]
Processing OpenCL kernels (video)
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/video/CMakeLists.txt
cmake_pch.cxx
bgfg_KNN.cpp
bgfg_gaussmix2.cpp
camshift.cpp
dis_flow.cpp
ecc.cpp
kalman.cpp
lkpyramid.cpp
optflowgf.cpp
optical_flow_io.cpp
tracker_feature.cpp
tracker_feature_set.cpp
tracker_mil_model.cpp
tracker_mil_state.cpp
tracker_model.cpp
tracker_sampler.cpp
tracker_sampler_algorithm.cpp
tracker_state_estimator.cpp
tracking_feature.cpp
tracking_online_mil.cpp
tracker.cpp
tracker_dasiampn.cpp
tracker_goturn.cpp
tracker_mil.cpp
tracker_nano.cpp
variational_refinement.cpp
opencl_kernels_video.cpp
opencv_video.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_video481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\modules\gapi\opencv_gapi.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-

```

install-0xsobkp0/opencv-python/opencv/modules/gapi/CMakeLists.txt

cmake_pch.cxx
grunarg.cpp
gorigin.cpp
gmat.cpp
garrray.cpp
gopaque.cpp
gscalar.cpp
gframe.cpp
gkernel.cpp
gbackend.cpp
gproto.cpp
gnode.cpp
gcall.cpp
gcomputation.cpp
operators.cpp
kernels_core.cpp
kernels_imgproc.cpp
kernels_video.cpp
kernels_nnparsers.cpp
kernels_streaming.cpp
kernels_stereo.cpp
render.cpp
render_ocv.cpp
ginfer.cpp
media.cpp
rmat.cpp
gmodel.cpp
gmodelbuilder.cpp
gislandmodel.cpp
gcompiler.cpp
gcompiled.cpp
gstreaming.cpp
helpers.cpp
dump_dot.cpp
islands.cpp
meta.cpp
kernels.cpp
exec.cpp
transformations.cpp
pattern_matching.cpp
perform_substitution.cpp
streaming.cpp
intrin.cpp
gabstracexecutor.cpp
gabstracstreamingexecutor.cpp
gexecutor.cpp
gtbbexecutor.cpp

gstreamingexecutor.cpp
gasync.cpp
gcpubackend.cpp
gcpukernel.cpp
gcpuimgproc.cpp
gcpustereo.cpp
gcpuvideo.cpp
gpcuore.cpp
gnnparsers.cpp
gfluidbuffer.cpp
gfluidbackend.cpp
gfluidimgproc.cpp
gfluidimgproc_func.dispatch.cpp
gfluidcore.cpp
gfluidcore_func.dispatch.cpp
goak.cpp
goakbackend.cpp
goak_memory_adapters.cpp
goclbackend.cpp
goclkernel.cpp
goclingproc.cpp
goclcore.cpp
giebackend.cpp
giewriter.cpp
govbackend.cpp
gonnxbackend.cpp
grenderocv.cpp
ft_render.cpp
gplaidmlcore.cpp
gplaidmlbackend.cpp
gmetabackend.cpp
gcompoundbackend.cpp
gcompoundkernel.cpp
s11n.cpp
serialization.cpp
gstreamingbackend.cpp
bindings_ie.cpp
bindings_onnx.cpp
bindings_ov.cpp
gpythonbackend.cpp
source.cpp
source_priv.cpp
file_data_provider.cpp
cfg_params.cpp
cfg_params_parser.cpp
utils.cpp
default.cpp
data_provider_interface_exception.cpp

```

base_frame_adapter.cpp
cpu_frame_adapter.cpp
dx11_frame_adapter.cpp
surface.cpp
surface_pool.cpp
shared_lock.cpp
accel_policy_cpu.cpp
accel_policy_dx11.cpp
accel_policy_va_api.cpp
dx11_alloc_resource.cpp
engine_session.cpp
processing_engine_base.cpp
decode_engine_legacy.cpp
decode_session.cpp
transcode_engine_legacy.cpp
transcode_session.cpp
preproc_engine.cpp
preproc_session.cpp
preproc_dispatcher.cpp
preproc_engine_interface.cpp
async_mfp_demux_data_provider.cpp
data_provider_dispatcher.cpp
cfg_param_device_selector.cpp
device_selector_interface.cpp
gstreamer_pipeline_facade.cpp
gstreamerpipeline.cpp
gstreamersource.cpp
gstreamer_buffer_utils.cpp
gstreamer_media_adapter.cpp
gstreamerenv.cpp
itt.cpp
opencv_gapi.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_gapi481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\imgcodecs\opencv_imgcodecs.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/imgcodecs/CMakeLists.txt
cmake_pch.cxx
loadsave.cpp
utils.cpp
grfmt_avif.cpp
grfmt_base.cpp

```

```

grfmt_bmp.cpp
grfmt_exr.cpp
grfmt_gdal.cpp
grfmt_gdcm.cpp
grfmt_hdr.cpp
grfmt_jpeg.cpp
grfmt_jpeg2000.cpp
grfmt_jpeg2000_openjpeg.cpp
grfmt_pam.cpp
grfmt_pfm.cpp
grfmt_png.cpp
grfmt_pxm.cpp
grfmt_spng.cpp
grfmt_sunras.cpp
grfmt_tiff.cpp
grfmt_webp.cpp
bitstrm.cpp
rgbe.cpp
exif.cpp
opencv_imgcodecs.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_imgcodecs481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\videoio\opencv_videoio.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/videoio/CMakeLists.txt
cmake_pch.cxx
videoio_registry.cpp
videoio_c.cpp
cap.cpp
cap_images.cpp
cap_mjpeg_encoder.cpp
cap_mjpeg_decoder.cpp
backend_static.cpp
container_avi.cpp
cap_dshow.cpp
cap_msmf.cpp
cap_obsensor_capture.cpp
obsensor_uvc_stream_channel.cpp
obsensor_stream_channel_msmf.cpp
backend_plugin.cpp
opencv_videoio.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-

```

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build\lib\Release\opencv_videoio481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsoft\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate directory or Output directory cannot reside under the Temporary directory as it could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-build\modules\highgui\opencv_highgui.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/opencv/modules/highgui/CMakeLists.txt
cmake_pch.cxx
backend.cpp
window.cpp
roiSelector.cpp
window_w32.cpp
opencv_highgui.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-build\lib\Release\opencv_highgui481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsoft\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate directory or Output directory cannot reside under the Temporary directory as it could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-build\modules\ml\opencv_ml.vcxproj]
Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/opencv/modules/ml/CMakeLists.txt
cmake_pch.cxx
ann_mlp.cpp
boost.cpp
data.cpp
em.cpp
gbt.cpp
inner_functions.cpp
kdtree.cpp
knearest.cpp
lr.cpp
nbayes.cpp
rtrees.cpp
svm.cpp
svmsgd.cpp
testset.cpp
tree.cpp
opencv_ml.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-build\lib\Release\opencv_ml481.lib
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsoft\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate directory or Output directory cannot reside under the Temporary directory as it

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could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\3rdparty\quirc\quirc.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/3rdparty/quirc/CMakeLists.txt
    decode.c
    quirc.c
    version_db.c
    quirc.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\3rdparty\lib\Release\quirc.lib
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\objdetect\opencv_objdetect.vcxproj]
    Processing OpenCL kernels (objdetect)
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/objdetect/CMakeLists.txt
    cmake_pch.cxx
    apriltag_quad_thresh.cpp
    zmaxheap.cpp
    aruco_board.cpp
    aruco_detector.cpp
    aruco_dictionary.cpp
    aruco_utils.cpp
    charuco_detector.cpp
    barcode.cpp
    abs_decoder.cpp
    hybrid_binarizer.cpp
    super_scale.cpp
    utils.cpp
    ean13_decoder.cpp
    ean8_decoder.cpp
    upcean_decoder.cpp
    bardetect.cpp
    cascadedetect.cpp
    cascadedetect_convert.cpp
    detection_based_tracker.cpp
    face_detect.cpp
    face_recognize.cpp
    graphical_code_detector.cpp
    hog.cpp
    main.cpp
    qrcode.cpp
    qrcode_encoder.cpp

```

```

    opencv_objdetect.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_objdetect481.lib
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\modules\photo\opencv_photo.vcxproj]
    Processing OpenCL kernels (photo)
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/photo/CMakeLists.txt
    cmake_pch.cxx
    align.cpp
    calibrate.cpp
    contrast_preserve.cpp
    denoise_tv11.cpp
    denoising.cpp
    denoising.cuda.cpp
    hdr_common.cpp
    inpaint.cpp
    merge.cpp
    npr.cpp
    seamless_cloning.cpp
    seamless_cloning_impl.cpp
    tonemap.cpp
    opencv_photo.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_photo481.lib
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\stitching\opencv_stitching.vcxproj]
    Processing OpenCL kernels (stitching)
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/stitching/CMakeLists.txt
    cmake_pch.cxx
    autocalib.cpp
    blenders.cpp
    camera.cpp
    exposure_compensate.cpp
    matchers.cpp
    motion_estimators.cpp

```

```

    seam_finders.cpp
    stitcher.cpp
    timelapsers.cpp
    util.cpp
    warpers.cpp
    warpers_cuda.cpp
    opencv_kernels_stitching.cpp
    opencv_stitching.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\Release\opencv_stitching481.lib
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\python3\opencv_python3.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/python/python3/CMakeLists.txt
    cv2.cpp
    cv2_util.cpp
    cv2_numpy.cpp
    cv2_convert.cpp
    cv2_highgui.cpp
    Creating library C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6\cmake-
build\lib\Release\opencv_python3.lib and object
C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-
python/_skbuild/win-amd64-3.6\cmake-build\lib\Release\opencv_python3.exp
    opencv_python3.vcxproj -> C:\Users\Legion\AppData\Local\Temp\pip-
install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-
build\lib\python3\Release\cv2.pyd
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-
build\modules\firstpass\videoio\opencv_videoio_plugins.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/opencv/modules/videoio/CMakeLists.txt
    C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsof
t\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate
directory or Output directory cannot reside under the Temporary directory as it
could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-
python\_skbuild\win-amd64-3.6\cmake-build\ALL_BUILD.vcxproj]
    Building Custom Rule C:/Users/Legion/AppData/Local/Temp/pip-

```

```

install-0xsobkp0/opencv-python/opencv/CMakeLists.txt
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community\MSBuild\Microsoft\VC\v160\Microsoft.CppBuild.targets(517,5): warning MSB8029: The Intermediate directory or Output directory cannot reside under the Temporary directory as it could lead to issues with incremental build.
[C:\Users\Legion\AppData\Local\Temp\pip-install-0xsobkp0\opencv-python\_skbuild\win-amd64-3.6\cmake-build\install.vcxproj]
1>
-- Install configuration: "Release"
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ippicv-readme.htm
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ippicv-EULA.rtf
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ippicv-third-party-programs.txt
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/x64/vc16/staticlib/ippicvmt.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ippiw-support.txt
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ippiw-third-party-programs.txt
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ippiw-EULA.rtf
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/flatbuffers-LICENSE.txt
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/opencvcl-headers-LICENSE.txt
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/x64/vc16/staticlib/ade.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ade-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ffmpeg-license.txt
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/etc/licenses/ffmpeg-readme.txt

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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/cvconfig.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/opencv_modules.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/OpenCVM_modules.cmake
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/OpenCVM_modules-release.cmake
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/OpenCVConfig-version.cmake
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/OpenCVConfig.cmake
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/./OpenCVConfig-version.cmake
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/./OpenCVConfig.cmake
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/./LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/./setup_vars_opencv4.cmd
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/zlib.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/zlib-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/libjpeg-turbo.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libjpeg-turbo-README.md
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libjpeg-turbo-LICENSE.md
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libjpeg-turbo-README.ijg
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/libtiff.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libtiff-COPYRIGHT
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/libwebp.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libopenjp2-README.md
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libopenjp2-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/libopenjp2.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/libpng.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libpng-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/libpng-README
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/IlmImf.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/openexr-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/openexr-AUTHORS.ilmbase
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/openexr-AUTHORS.openexr
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/ippiw.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/libprotobuf.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/protobuf-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/protobuf-README.md
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/quirc.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/quirc-LICENSE
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/ittnotify.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/ittnotify-LICENSE.BSD
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/ittnotify-LICENSE.GPL
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/opencv.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_core481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/affine.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/async.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/base.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/bindings_utils.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/bufferpool.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/check.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/core.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/core_c.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda.inl.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/block.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/border_interpolate.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/color.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/common.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/datamov_utils.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/detail/color_detail.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/detail/reduce.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/detail/reduce_key_val.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/detail/transform_detail.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/detail/type_traits_detail.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/detail/vec_distance_detail.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/dynamic_smem.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/emulation.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/filters.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/funcattrib.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/functional.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/limits.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/reduce.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/saturate_cast.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/scan.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/simd_functions.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/transform.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/type_traits.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/utility.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/vec_distance.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/vec_math.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/vec_traits.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/warp.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/warp_reduce.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda/warp_shuffle.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda_stream_accessor.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cuda_types.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cv_cpu_dispatch.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cv_cpu_helper.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cvdef.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cvstd.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cvstd.inl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/cvstd_wrapper.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/detail/async_promise.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/detail/dispatch_helper.impl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/detail/exception_ptr.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/directx.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/dualquaternion.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/dualquaternion.inl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/eigen.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/fast_math.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/hal.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/interface.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_avx.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_avx512.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_cpp.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_forward.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_lasx.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_msa.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_neon.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_rvv.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_rvv071.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_rvv_010_compat_non-policy.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_rvv_010_compat_overloaded-non-policy.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_rvv_compat_overloaded.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_rvv_scalable.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_sse.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_sse_em.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_vsx.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/intrin_wasm.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/msa_macros.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/hal/simd_utils.impl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/mat.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/mat.inl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/matx.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/neon_utils.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/ocl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/ocl_genbase.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencvcl/ocl_defs.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencvcl/opencvcl_info.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencvcl/opencvcl_svm.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/autogenerated/opencv_clblas.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/autogenerated/opencv_clfft.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/autogenerated/opencv_core.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-install/include/open
cv2/core/opencv_runtime/autogenerated/opencv_core_wrappers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/autogenerated/opencv_gl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/autogenerated/opencv_gl_wrappers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_clblas.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_clfft.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_core.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_core_wrappers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_gl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_gl_wrappers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_svm_20.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_svm_definitions.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencv_runtime/opencv_svm_hsa_extension.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/opencvgl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/operations.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/optim.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/ovx.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/parallel/backend/parallel_for.openmp.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/parallel/backend/parallel_for.tbb.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/parallel/parallel_backend.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/persistence.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/quaternion.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/quaternion.inl.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/saturate.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/simd_intrinsics.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/softfloat.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/sse_utils.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/traits.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/types.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/types_c.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utility.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/allocator_stats.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/allocator_stats.impl.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/filesystem.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/fp_control_utils.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/instrumentation.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/logger.defines.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/logger.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/logtag.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/tls.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/utils/trace.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/va_intel.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/version.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/core/vsx_utils.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/licenses/SoftFloat-COPYING.txt
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_flann481.lib
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/all_indices.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/allocator.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/any.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/autotuned_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/composite_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/config.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/defines.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/dist.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/dummy.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/dynamic_bitset.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/flann.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/flann_base.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/general.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/ground_truth.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/hdf5.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/heap.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/hierarchical_clustering_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/index_testing.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/kdtree_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/kdtree_single_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/kmeans_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/linear_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/logger.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/lsh_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/lsh_table.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/matrix.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/miniflann.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/nn_index.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/object_factory.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/params.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/random.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/result_set.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/sampling.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/saving.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/simplex_downhill.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/flann/timer.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_imgproc481.lib
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/bindings.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/detail/gcgraph.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/hal/hal.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/hal/interface.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/imgproc.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/imgproc_c.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/segmentation.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgproc/types_c.h
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_ml481.lib
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/ml.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/ml/ml.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/ml/ml.inl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_photo481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/photo.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/photo/cuda.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/photo/legacy/constants_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/photo/photo.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/all_layers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/dict.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/dnn.inl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/layer.details.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/layer.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/shape_utils.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/utils/debug_utils.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/utils/inference_engine.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/dnn/version.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_features2d481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/features2d.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/features2d/features2d.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/features2d/hal/interface.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_imgcodecs481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgcodecs.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgcodecs/ios.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgcodecs/legacy/constants_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/imgcodecs/macosx.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_videoio481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/videoio.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/videoio/cap_ios.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/videoio/legacy/constants_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/videoio/registry.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/videoio/videoio.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/videoio/videoio_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/bin/opencv_videoio_ffmpeg481_64.dll
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/bin/opencv_videoio_ffmpeg481_64.dll
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_calib3d481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/calib3d.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/calib3d/calib3d.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/calib3d/calib3d_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_highgui481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/highgui.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/highgui/highgui.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/highgui/highgui_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_objdetect481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/aruco_board.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/aruco_detector.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/aruco_dictionary.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/barcode.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/charuco_detector.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/detection_based_tracker.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/objdetect/face.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/include/opencv2/objdetect/graphical_code_detector.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/include/opencv2/objdetect/objdetect.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_stitching481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/autocalib.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/blenders.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/camera.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/exposure_compensate.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/matchers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/motion_estimators.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/seam_finders.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/timelapsers.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/include/opencv2/stitching/detail/util.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/stitching/detail/util_inl.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/x64/vc16/staticlib/opencv_video481.lib
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/video.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/video/background_segm.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/video/detail/tracking.detail.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/video/legacy/constants_c.h
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/gapi/core.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/gapi/cpu/core.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/gapi/cpu/gcpukernel.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/gapi/cpu/imgproc.hpp
-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/include/opencv2/gapi/gpu/imgproc.hpp
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/gapi/gscalar.hpp
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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/include/opencv2/gapi/oak/oak.hpp
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install-Oxsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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-- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/load_config_py2.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/python/cv2/config.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/python/cv2/misc/__init__.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/misc/version.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/mat_wrapper/__init__.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/utils/__init__.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/gapi/__init__.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/python-3/cv2.pyd
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/python/cv2/config-3.py
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_eye.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_eye_tree_eyeglasses.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_frontalcatface.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_frontalcatface_extended.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_frontalface_alt.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_frontalface_alt2.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_frontalface_alt_tree.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_frontalface_default.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_fullbody.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_lefteye_2splits.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_license_plate_rus_16stages.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_lowerbody.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/haarcascades/haarcascade_profileface.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/etc/haarcascades/haarcascade_righteye_2splits.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/etc/haarcascades/haarcascade_russian_plate_number.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
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install/etc/haarcascades/haarcascade_upperbody.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/lbpcascades/lbpcascade_frontalcatface.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/lbpcascades/lbpcascade_frontalface.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/lbpcascades/lbpcascade_frontalface_improved.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-
install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/lbpcascades/lbpcascade_profileface.xml
    -- Installing: C:/Users/Legion/AppData/Local/Temp/pip-

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install-0xsobkp0/opencv-python/_skbuild/win-amd64-3.6/cmake-
install/etc/lbpcascades/lbpcascade_silverware.xml
  Copying files from CMake output
  creating directory _skbuild\win-amd64-3.6\cmake-install\cv2
  copying _skbuild\win-amd64-3.6\cmake-
install\bin\opencv_videoio_ffmpeg481_64.dll -> _skbuild\win-amd64-3.6\cmake-
install\cv2\opencv_videoio_ffmpeg481_64.dll
  copying _skbuild\win-amd64-3.6\cmake-install\python\cv2\python-3\cv2.pyd ->
_skbuild\win-amd64-3.6\cmake-install\cv2\cv2.pyd
  copying _skbuild\win-amd64-3.6\cmake-install\python\cv2\__init__.py ->
_skbuild\win-amd64-3.6\cmake-install\cv2\__init__.py
  copying _skbuild\win-amd64-3.6\cmake-install\python\cv2\load_config_py2.py ->
_skbuild\win-amd64-3.6\cmake-install\cv2\load_config_py2.py
  copying _skbuild\win-amd64-3.6\cmake-install\python\cv2\load_config_py3.py ->
_skbuild\win-amd64-3.6\cmake-install\cv2\load_config_py3.py
  copying _skbuild\win-amd64-3.6\cmake-install\python\cv2\config.py ->
_skbuild\win-amd64-3.6\cmake-install\cv2\config.py
  copying _skbuild\win-amd64-3.6\cmake-install\python\cv2\config-3.py ->
_skbuild\win-amd64-3.6\cmake-install\cv2\config-3.py
Traceback (most recent call last):
  File "C:\Users\Legion\anaconda3\envs\py36\lib\site-
packages\pip\_vendor\pep517\_in_process.py", line 280, in <module>
    main()
  File "C:\Users\Legion\anaconda3\envs\py36\lib\site-
packages\pip\_vendor\pep517\_in_process.py", line 263, in main
    json_out['return_val'] = hook(**hook_input['kwargs'])
  File "C:\Users\Legion\anaconda3\envs\py36\lib\site-
packages\pip\_vendor\pep517\_in_process.py", line 205, in build_wheel
    metadata_directory)
  File "C:\Users\Legion\AppData\Local\Temp\pip-build-env-
zn_ea8u\overlay\Lib\site-packages\setuptools\build_meta.py", line 231, in
build_wheel
    wheel_directory, config_settings)
  File "C:\Users\Legion\AppData\Local\Temp\pip-build-env-
zn_ea8u\overlay\Lib\site-packages\setuptools\build_meta.py", line 215, in
_build_with_temp_dir
    self.run_setup()
  File "C:\Users\Legion\AppData\Local\Temp\pip-build-env-
zn_ea8u\overlay\Lib\site-packages\setuptools\build_meta.py", line 268, in
run_setup
    self).run_setup(setup_script=setup_script)
  File "C:\Users\Legion\AppData\Local\Temp\pip-build-env-
zn_ea8u\overlay\Lib\site-packages\setuptools\build_meta.py", line 158, in
run_setup
    exec(compile(code, __file__, 'exec'), locals())
  File "setup.py", line 535, in <module>
    main()
  File "setup.py", line 309, in main

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    cmake_source_dir=cmake_source_dir,
    File "C:\Users\Legion\AppData\Local\Temp\pip-build-env-
zn_ea8u\overlay\Lib\site-packages\skbuild\setuptools_wrap.py", line 683, in
setup
    cmake_install_dir,
    File "setup.py", line 448, in _classify_installed_files_override
        raise Exception("Not found: '%s'" % relpath_re)
Exception: Not found: 'python/cv2/py.typed'
-----
ERROR: Failed building wheel for opencv-python
ERROR: Could not build wheels for opencv-python which use PEP 517 and cannot be
installed directly

```

```

[6]: # each weed class is in a dedicated folder
os.listdir(DATA_FOLDER)

```

```

[6]: ['Black-grass',
      'Charlock',
      'Cleavers',
      'Common Chickweed',
      'Common wheat',
      'Fat Hen',
      'Loose Silky-bent',
      'Maize',
      'Scentless Mayweed',
      'Shepherds Purse',
      'Small-flowered Cranesbill',
      'Sugar beet']

```

```

[7]: # let's walk over the directory structure, so we understand
# how the images are stored

for class_folder_name in os.listdir(DATA_FOLDER):
    class_folder_path = os.path.join(DATA_FOLDER, class_folder_name)
    for image_path in glob(os.path.join(class_folder_path, "*.png")):
        print(image_path)

```

```

v2-plant-seedlings-dataset\Black-grass\1.png
v2-plant-seedlings-dataset\Black-grass\10.png
v2-plant-seedlings-dataset\Black-grass\100.png
v2-plant-seedlings-dataset\Black-grass\101.png
v2-plant-seedlings-dataset\Black-grass\102.png
v2-plant-seedlings-dataset\Black-grass\103.png
v2-plant-seedlings-dataset\Black-grass\104.png
v2-plant-seedlings-dataset\Black-grass\105.png
v2-plant-seedlings-dataset\Black-grass\106.png
v2-plant-seedlings-dataset\Black-grass\107.png
v2-plant-seedlings-dataset\Black-grass\108.png

```


[illegible]

[illegible]

v2-plant-seedlings-dataset\Black-grass\90.png
v2-plant-seedlings-dataset\Black-grass\91.png
v2-plant-seedlings-dataset\Black-grass\92.png
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v2-plant-seedlings-dataset\Common Chickweed\11.png
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v2-plant-seedlings-dataset\Common Chickweed\111.png
v2-plant-seedlings-dataset\Common Chickweed\112.png
v2-plant-seedlings-dataset\Common Chickweed\113.png
v2-plant-seedlings-dataset\Common Chickweed\114.png
v2-plant-seedlings-dataset\Common Chickweed\115.png

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v2-plant-seedlings-dataset\Common wheat\68.png
v2-plant-seedlings-dataset\Common wheat\69.png
v2-plant-seedlings-dataset\Common wheat\7.png
v2-plant-seedlings-dataset\Common wheat\70.png
v2-plant-seedlings-dataset\Common wheat\71.png
v2-plant-seedlings-dataset\Common wheat\72.png
v2-plant-seedlings-dataset\Common wheat\73.png
v2-plant-seedlings-dataset\Common wheat\74.png
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v2-plant-seedlings-dataset\Common wheat\97.png
v2-plant-seedlings-dataset\Common wheat\98.png
v2-plant-seedlings-dataset\Common wheat\99.png
v2-plant-seedlings-dataset\Fat Hen\1.png
v2-plant-seedlings-dataset\Fat Hen\10.png
v2-plant-seedlings-dataset\Fat Hen\100.png
v2-plant-seedlings-dataset\Fat Hen\101.png
v2-plant-seedlings-dataset\Fat Hen\102.png
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v2-plant-seedlings-dataset\Fat Hen\106.png
v2-plant-seedlings-dataset\Fat Hen\107.png
v2-plant-seedlings-dataset\Fat Hen\108.png
v2-plant-seedlings-dataset\Fat Hen\109.png
v2-plant-seedlings-dataset\Fat Hen\11.png

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v2-plant-seedlings-dataset\Fat Hen\201.png
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v2-plant-seedlings-dataset\Fat Hen\203.png
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v2-plant-seedlings-dataset\Fat Hen\240.png
v2-plant-seedlings-dataset\Fat Hen\241.png
v2-plant-seedlings-dataset\Fat Hen\242.png

v2-plant-seedlings-dataset\Fat Hen\288.png
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v2-plant-seedlings-dataset\Fat Hen\301.png
v2-plant-seedlings-dataset\Fat Hen\302.png
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v2-plant-seedlings-dataset\Fat Hen\374.png
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v2-plant-seedlings-dataset\Fat Hen\461.png
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v2-plant-seedlings-dataset\Fat Hen\463.png
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v2-plant-seedlings-dataset\Fat Hen\473.png
v2-plant-seedlings-dataset\Fat Hen\474.png
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v2-plant-seedlings-dataset\Fat Hen\501.png
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v2-plant-seedlings-dataset\Fat Hen\59.png
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v2-plant-seedlings-dataset\Fat Hen\97.png
v2-plant-seedlings-dataset\Fat Hen\98.png
v2-plant-seedlings-dataset\Fat Hen\99.png
v2-plant-seedlings-dataset\Loose Silky-bent\1.png
v2-plant-seedlings-dataset\Loose Silky-bent\10.png
v2-plant-seedlings-dataset\Loose Silky-bent\100.png

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v2-plant-seedlings-dataset\Maize\107.png
v2-plant-seedlings-dataset\Maize\108.png
v2-plant-seedlings-dataset\Maize\109.png
v2-plant-seedlings-dataset\Maize\11.png
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v2-plant-seedlings-dataset\Maize\194.png
v2-plant-seedlings-dataset\Maize\195.png
v2-plant-seedlings-dataset\Maize\196.png
v2-plant-seedlings-dataset\Maize\197.png
v2-plant-seedlings-dataset\Maize\198.png
v2-plant-seedlings-dataset\Maize\199.png
v2-plant-seedlings-dataset\Maize\2.png
v2-plant-seedlings-dataset\Maize\20.png
v2-plant-seedlings-dataset\Maize\200.png
v2-plant-seedlings-dataset\Maize\201.png
v2-plant-seedlings-dataset\Maize\202.png
v2-plant-seedlings-dataset\Maize\203.png
v2-plant-seedlings-dataset\Maize\204.png
v2-plant-seedlings-dataset\Maize\205.png
v2-plant-seedlings-dataset\Maize\206.png
v2-plant-seedlings-dataset\Maize\207.png
v2-plant-seedlings-dataset\Maize\208.png
v2-plant-seedlings-dataset\Maize\209.png
v2-plant-seedlings-dataset\Maize\21.png
v2-plant-seedlings-dataset\Maize\210.png
v2-plant-seedlings-dataset\Maize\211.png
v2-plant-seedlings-dataset\Maize\212.png
v2-plant-seedlings-dataset\Maize\213.png
v2-plant-seedlings-dataset\Maize\214.png
v2-plant-seedlings-dataset\Maize\215.png
v2-plant-seedlings-dataset\Maize\216.png
v2-plant-seedlings-dataset\Maize\217.png
v2-plant-seedlings-dataset\Maize\218.png
v2-plant-seedlings-dataset\Maize\219.png
v2-plant-seedlings-dataset\Maize\22.png
v2-plant-seedlings-dataset\Maize\220.png
v2-plant-seedlings-dataset\Maize\221.png
v2-plant-seedlings-dataset\Maize\222.png
v2-plant-seedlings-dataset\Maize\223.png
v2-plant-seedlings-dataset\Maize\224.png
v2-plant-seedlings-dataset\Maize\225.png
v2-plant-seedlings-dataset\Maize\226.png
v2-plant-seedlings-dataset\Maize\227.png
v2-plant-seedlings-dataset\Maize\228.png
v2-plant-seedlings-dataset\Maize\229.png
v2-plant-seedlings-dataset\Maize\23.png
v2-plant-seedlings-dataset\Maize\230.png
v2-plant-seedlings-dataset\Maize\231.png
v2-plant-seedlings-dataset\Maize\232.png
v2-plant-seedlings-dataset\Maize\233.png
v2-plant-seedlings-dataset\Maize\234.png
v2-plant-seedlings-dataset\Maize\235.png
v2-plant-seedlings-dataset\Maize\236.png

v2-plant-seedlings-dataset\Maize\237.png
v2-plant-seedlings-dataset\Maize\238.png
v2-plant-seedlings-dataset\Maize\239.png
v2-plant-seedlings-dataset\Maize\24.png
v2-plant-seedlings-dataset\Maize\240.png
v2-plant-seedlings-dataset\Maize\241.png
v2-plant-seedlings-dataset\Maize\242.png
v2-plant-seedlings-dataset\Maize\243.png
v2-plant-seedlings-dataset\Maize\244.png
v2-plant-seedlings-dataset\Maize\245.png
v2-plant-seedlings-dataset\Maize\246.png
v2-plant-seedlings-dataset\Maize\247.png
v2-plant-seedlings-dataset\Maize\248.png
v2-plant-seedlings-dataset\Maize\249.png
v2-plant-seedlings-dataset\Maize\25.png
v2-plant-seedlings-dataset\Maize\250.png
v2-plant-seedlings-dataset\Maize\251.png
v2-plant-seedlings-dataset\Maize\252.png
v2-plant-seedlings-dataset\Maize\253.png
v2-plant-seedlings-dataset\Maize\254.png
v2-plant-seedlings-dataset\Maize\255.png
v2-plant-seedlings-dataset\Maize\256.png
v2-plant-seedlings-dataset\Maize\257.png
v2-plant-seedlings-dataset\Maize\258.png
v2-plant-seedlings-dataset\Maize\259.png
v2-plant-seedlings-dataset\Maize\26.png
v2-plant-seedlings-dataset\Maize\260.png
v2-plant-seedlings-dataset\Maize\27.png
v2-plant-seedlings-dataset\Maize\28.png
v2-plant-seedlings-dataset\Maize\29.png
v2-plant-seedlings-dataset\Maize\3.png
v2-plant-seedlings-dataset\Maize\30.png
v2-plant-seedlings-dataset\Maize\31.png
v2-plant-seedlings-dataset\Maize\32.png
v2-plant-seedlings-dataset\Maize\33.png
v2-plant-seedlings-dataset\Maize\34.png
v2-plant-seedlings-dataset\Maize\35.png
v2-plant-seedlings-dataset\Maize\36.png
v2-plant-seedlings-dataset\Maize\37.png
v2-plant-seedlings-dataset\Maize\38.png
v2-plant-seedlings-dataset\Maize\39.png
v2-plant-seedlings-dataset\Maize\4.png
v2-plant-seedlings-dataset\Maize\40.png
v2-plant-seedlings-dataset\Maize\41.png
v2-plant-seedlings-dataset\Maize\42.png
v2-plant-seedlings-dataset\Maize\43.png
v2-plant-seedlings-dataset\Maize\44.png
v2-plant-seedlings-dataset\Maize\45.png

v2-plant-seedlings-dataset\Maize\47.png
v2-plant-seedlings-dataset\Maize\48.png
v2-plant-seedlings-dataset\Maize\49.png
v2-plant-seedlings-dataset\Maize\5.png
v2-plant-seedlings-dataset\Maize\50.png
v2-plant-seedlings-dataset\Maize\51.png
v2-plant-seedlings-dataset\Maize\52.png
v2-plant-seedlings-dataset\Maize\55.png
v2-plant-seedlings-dataset\Maize\56.png
v2-plant-seedlings-dataset\Maize\57.png
v2-plant-seedlings-dataset\Maize\58.png
v2-plant-seedlings-dataset\Maize\59.png
v2-plant-seedlings-dataset\Maize\6.png
v2-plant-seedlings-dataset\Maize\60.png
v2-plant-seedlings-dataset\Maize\61.png
v2-plant-seedlings-dataset\Maize\62.png
v2-plant-seedlings-dataset\Maize\63.png
v2-plant-seedlings-dataset\Maize\64.png
v2-plant-seedlings-dataset\Maize\65.png
v2-plant-seedlings-dataset\Maize\66.png
v2-plant-seedlings-dataset\Maize\67.png
v2-plant-seedlings-dataset\Maize\68.png
v2-plant-seedlings-dataset\Maize\69.png
v2-plant-seedlings-dataset\Maize\7.png
v2-plant-seedlings-dataset\Maize\70.png
v2-plant-seedlings-dataset\Maize\71.png
v2-plant-seedlings-dataset\Maize\72.png
v2-plant-seedlings-dataset\Maize\73.png
v2-plant-seedlings-dataset\Maize\74.png
v2-plant-seedlings-dataset\Maize\75.png
v2-plant-seedlings-dataset\Maize\76.png
v2-plant-seedlings-dataset\Maize\77.png
v2-plant-seedlings-dataset\Maize\78.png
v2-plant-seedlings-dataset\Maize\79.png
v2-plant-seedlings-dataset\Maize\8.png
v2-plant-seedlings-dataset\Maize\80.png
v2-plant-seedlings-dataset\Maize\81.png
v2-plant-seedlings-dataset\Maize\82.png
v2-plant-seedlings-dataset\Maize\83.png
v2-plant-seedlings-dataset\Maize\84.png
v2-plant-seedlings-dataset\Maize\85.png
v2-plant-seedlings-dataset\Maize\86.png
v2-plant-seedlings-dataset\Maize\87.png
v2-plant-seedlings-dataset\Maize\88.png
v2-plant-seedlings-dataset\Maize\89.png
v2-plant-seedlings-dataset\Maize\9.png
v2-plant-seedlings-dataset\Maize\90.png
v2-plant-seedlings-dataset\Maize\91.png

[illegible]

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```

v2-plant-seedlings-dataset\Sugar beet\92.png
v2-plant-seedlings-dataset\Sugar beet\93.png
v2-plant-seedlings-dataset\Sugar beet\94.png
v2-plant-seedlings-dataset\Sugar beet\95.png
v2-plant-seedlings-dataset\Sugar beet\96.png
v2-plant-seedlings-dataset\Sugar beet\97.png
v2-plant-seedlings-dataset\Sugar beet\98.png
v2-plant-seedlings-dataset\Sugar beet\99.png

```

```

[8]: # let's create a dataframe:
# the dataframe stores the path to the image in one column
# and the class of the weed (the target) in the next column

images_df = []

# navigate within each folder
for class_folder_name in os.listdir(DATA_FOLDER):
    class_folder_path = os.path.join(DATA_FOLDER, class_folder_name)

    # collect every image path
    for image_path in glob(os.path.join(class_folder_path, "*.png")):

        tmp = pd.DataFrame([image_path, class_folder_name]).T
        images_df.append(tmp)

# concatenate the final df
images_df = pd.concat(images_df, axis=0, ignore_index=True)
images_df.columns = ['image', 'target']
images_df.head(10)

```

```

[8]:

```

	image	target
0	v2-plant-seedlings-dataset\Black-grass\1.png	Black-grass
1	v2-plant-seedlings-dataset\Black-grass\10.png	Black-grass
2	v2-plant-seedlings-dataset\Black-grass\100.png	Black-grass
3	v2-plant-seedlings-dataset\Black-grass\101.png	Black-grass
4	v2-plant-seedlings-dataset\Black-grass\102.png	Black-grass
5	v2-plant-seedlings-dataset\Black-grass\103.png	Black-grass
6	v2-plant-seedlings-dataset\Black-grass\104.png	Black-grass
7	v2-plant-seedlings-dataset\Black-grass\105.png	Black-grass
8	v2-plant-seedlings-dataset\Black-grass\106.png	Black-grass
9	v2-plant-seedlings-dataset\Black-grass\107.png	Black-grass

```

[9]: # how many images do we've got per class?
# this should give similar results to what we observed
# when we inspected the lenght of image list in the dictionary

images_df['target'].value_counts()

```

```
[9]: Loose Silky-bent          762
     Common Chickweed         713
     Scentless Mayweed        607
     Small-flowered Cranesbill 576
     Fat Hen                   538
     Sugar beet                463
     Charlock                  452
     Cleavers                  335
     Black-grass               309
     Shepherds Purse           274
     Maize                     257
     Common wheat              253
     Name: target, dtype: int64
```

```
[10]: # let's isolate a path, for demo
      # we want to load the image in this path later

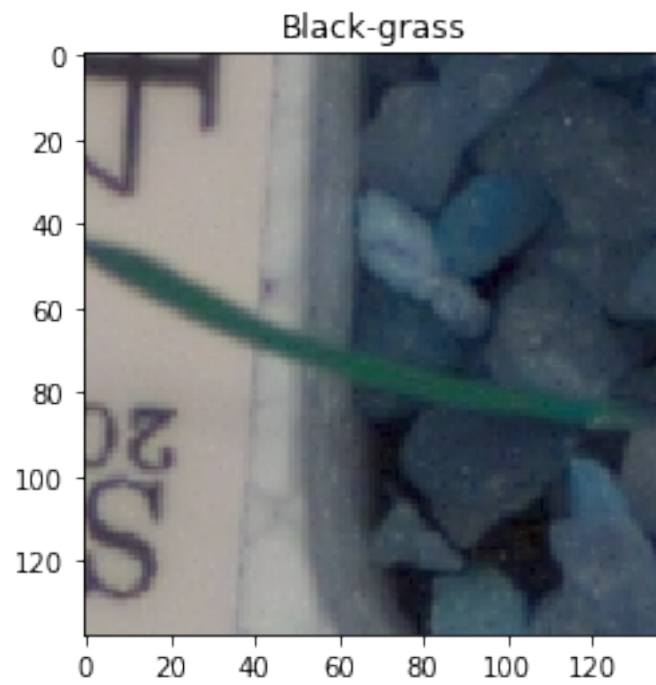
      images_df.loc[0, 'image']
```

```
[10]: 'v2-plant-seedlings-dataset\\Black-grass\\1.png'
```

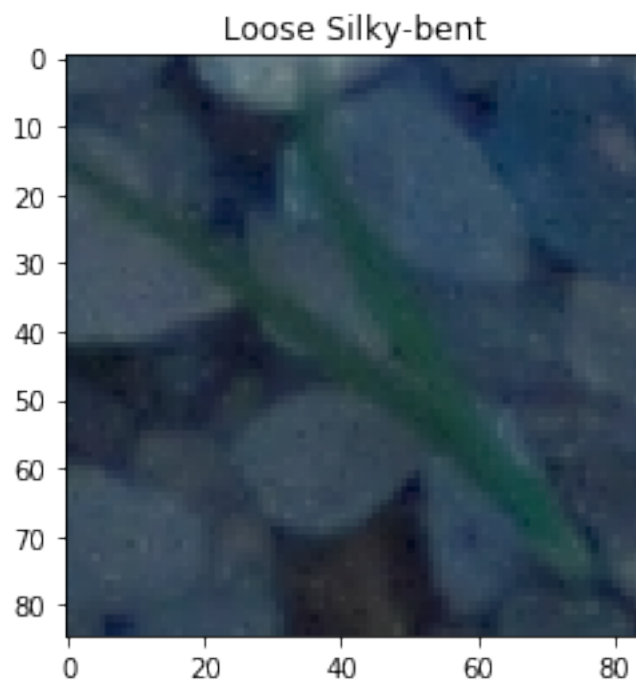
```
[11]: # let's visualise a few images
      # if the images you see in your notebook are not the same, don't

      def plot_single_image(df, image_number):
          im = cv2.imread(df.loc[image_number, 'image'])
          plt.title(df.loc[image_number, 'target'])
          plt.imshow(im)

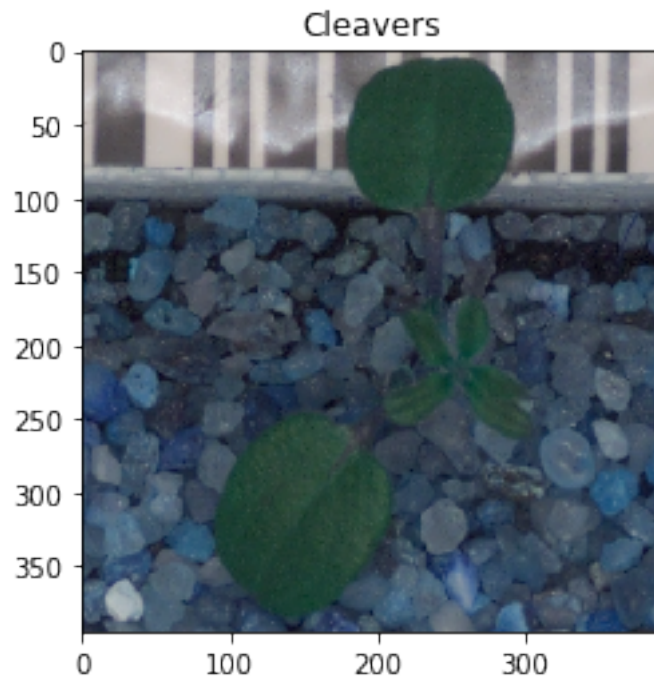
      plot_single_image(images_df, 0)
```



```
[12]: plot_single_image(images_df, 3000)
```



```
[13]: plot_single_image(images_df, 1000)
```



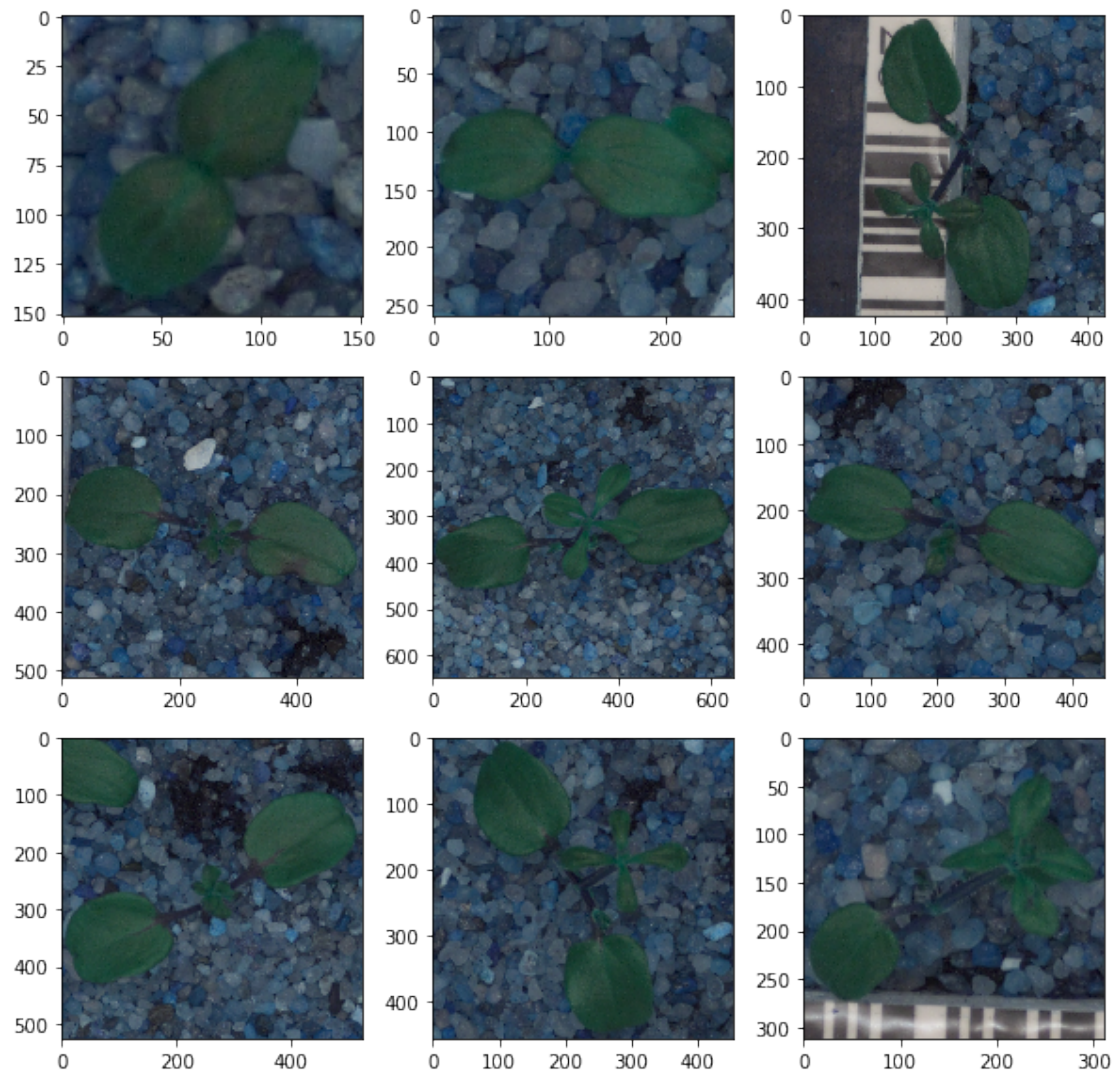
```
[14]: # let's go ahead and plot a bunch of our images together,
# so we get a better feeling of how our images look like

def plot_for_class(df, label):
    # function plots 9 images
    nb_rows = 3
    nb_cols = 3

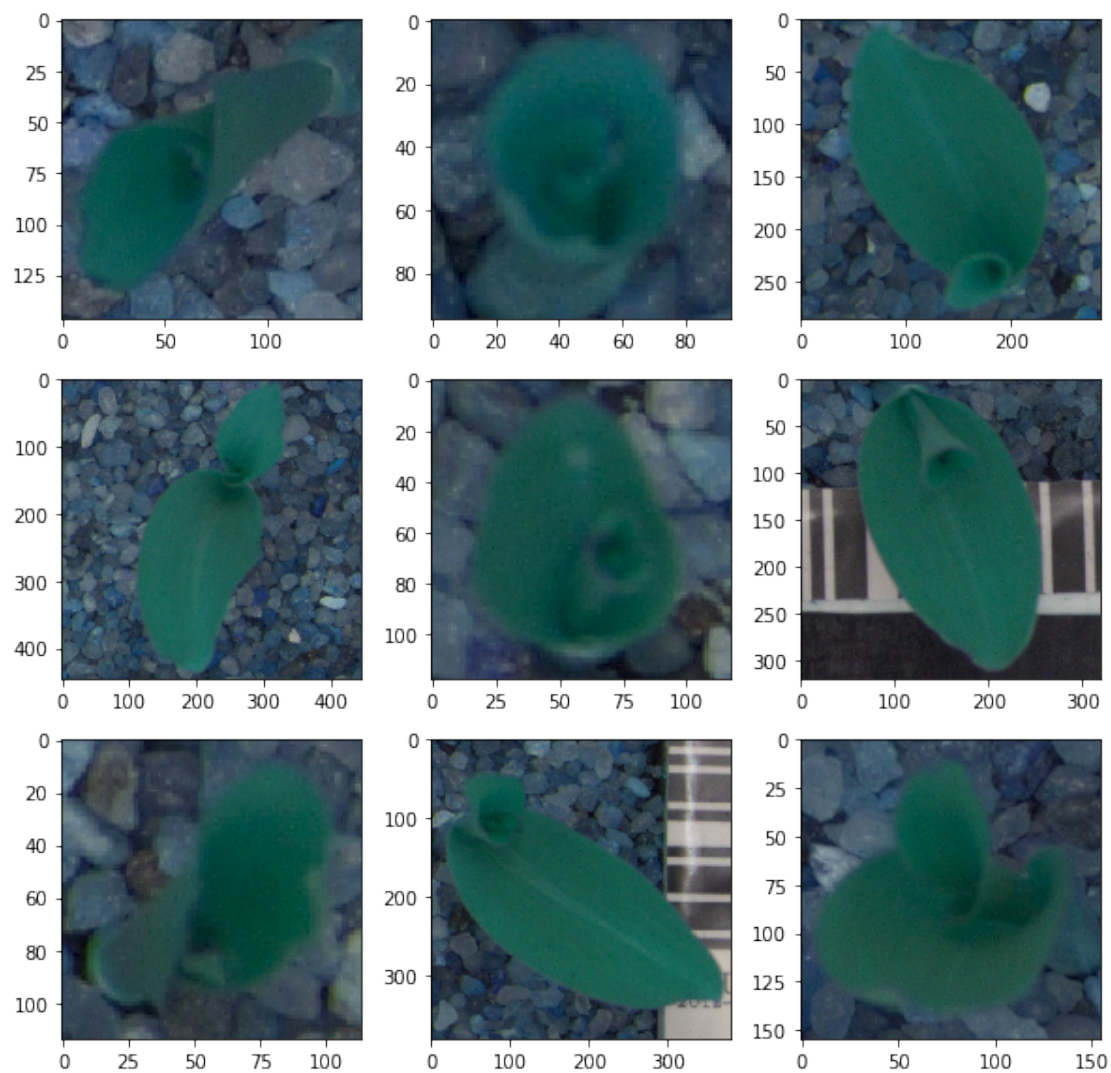
    fig, axs = plt.subplots(nb_rows, nb_cols, figsize=(10, 10))

    n = 0
    for i in range(0, nb_rows):
        for j in range(0, nb_cols):
            tmp = df[df['target'] == label ]
            tmp.reset_index(drop=True, inplace=True)
            im = cv2.imread(tmp.loc[n, 'image'])
            axs[i, j].imshow(im)
            n += 1
```

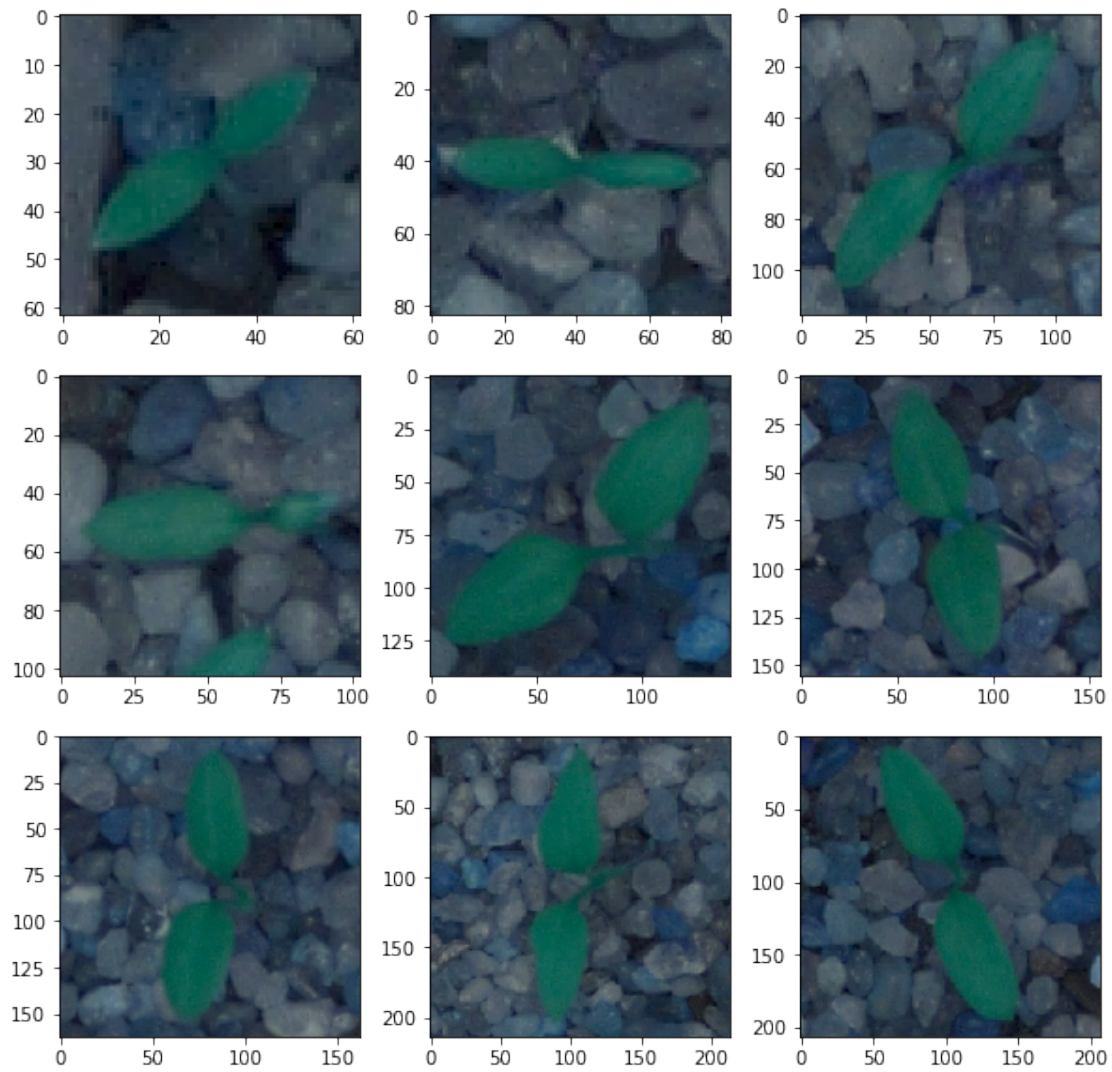
```
[15]: plot_for_class(images_df, 'Cleavers')
```



```
[16]: plot_for_class(images_df, 'Maize')
```



```
[17]: plot_for_class(images_df, 'Common Chickweed')
```

0.4 Separate train and test

```
[18]: # train_test_split

X_train, X_test, y_train, y_test = train_test_split(images_df['image'],
                                                    images_df['target'], test_size=0.20, random_state=101)

print(X_train.shape)
print(X_test.shape)
```

```
(4431,)
(1108,)
```

```
[19]: # the indeces of the training data are mixed
      # this will cause problems later
```

```
X_train.head()
```

```
[19]: 1922      v2-plant-seedlings-dataset\Common wheat\204.png
      4164      v2-plant-seedlings-dataset\Scentless Mayweed\5...
      2952      v2-plant-seedlings-dataset\Loose Silky-bent\43...
      287      v2-plant-seedlings-dataset\Black-grass\8.png
      4971      v2-plant-seedlings-dataset\Small-flowered Cran...
      Name: image, dtype: object
```

```
[20]: # reset index, because later we iterate over row number
```

```
X_train.reset_index(drop=True, inplace=True)
X_test.reset_index(drop=True, inplace=True)
X_train.head()
```

```
[20]: 0      v2-plant-seedlings-dataset\Common wheat\204.png
      1      v2-plant-seedlings-dataset\Scentless Mayweed\5...
      2      v2-plant-seedlings-dataset\Loose Silky-bent\43...
      3      v2-plant-seedlings-dataset\Black-grass\8.png
      4      v2-plant-seedlings-dataset\Small-flowered Cran...
      Name: image, dtype: object
```

```
[21]: # reset index in target as well
```

```
y_train.reset_index(drop=True, inplace=True)
y_test.reset_index(drop=True, inplace=True)
```

```
[22]: # percentage of images within each class
```

```
y_train.value_counts() / len(y_train)
```

```
[22]: Loose Silky-bent          0.138118
      Common Chickweed      0.129542
      Scentless Mayweed     0.111262
      Small-flowered Cranesbill 0.103363
      Fat Hen               0.095012
      Sugar beet            0.084180
      Charlock              0.082148
      Cleavers              0.060032
      Black-grass           0.055969
      Shepherds Purse       0.051230
      Common wheat          0.044911
      Maize                 0.044234
      Name: target, dtype: float64
```



```
[23]: # should be the same in the test set
```

```
y_test.value_counts() / len(y_test)
```

```
[23]: Loose Silky-bent          0.135379
Common Chickweed             0.125451
Small-flowered Cranesbill    0.106498
Fat Hen                       0.105596
Scentless Mayweed            0.102888
Sugar beet                   0.081227
Charlock                     0.079422
Cleavers                     0.062274
Black-grass                   0.055054
Maize                        0.055054
Common wheat                 0.048736
Shepherds Purse              0.042419
Name: target, dtype: float64
```

```
[24]: # let's prepare the target
# it is a multiclass classification, so we need to make
# one hot encoding of the target
```

```
encoder = LabelEncoder()
encoder.fit(y_train)

train_y = np_utils.to_categorical(encoder.transform(y_train))
test_y = np_utils.to_categorical(encoder.transform(y_test))

train_y
```

```
[24]: array([[0., 0., 0., ..., 0., 0., 0.],
        [0., 0., 0., ..., 0., 0., 0.],
        [0., 0., 0., ..., 0., 0., 0.],
        ...,
        [0., 0., 0., ..., 0., 0., 0.],
        [0., 0., 0., ..., 0., 0., 0.],
        [0., 0., 0., ..., 0., 1., 0.]])
```

```
[25]: # The images in our folders, are all different sizes
# For neural networks however, we need images in the same size
# The images will all be resized to this size:
```

```
IMAGE_SIZE = 150
```

```
[26]: def im_resize(df, n):
        im = cv2.imread(df[n])
        im = cv2.resize(im, (IMAGE_SIZE, IMAGE_SIZE))
```

```
return im
```

```
[27]: tmp = im_resize(X_train, 7)
      tmp.shape
```

```
[27]: (150, 150, 3)
```

```
[28]: # the shape of the datasets needs to be (n1, n2, n3, n4)
      # where n1 is the number of observations
      # n2 and n3 are image width and length
      # and n4 indicates that it is a color image, so 3 planes per image

      def create_dataset(df, image_size):
          # functions creates dataset as required for cnn
          tmp = np.zeros((len(df), image_size, image_size, 3), dtype='float32')

          for n in range(0, len(df)):
              im = im_resize(df, n)
              tmp[n] = im

          print('Dataset Images shape: {} size: {:,}'.format(tmp.shape, tmp.size))
          return tmp
```

```
[29]: x_train = create_dataset(X_train, IMAGE_SIZE)
```

```
Dataset Images shape: (4431, 150, 150, 3) size: 299,092,500
```

```
[30]: x_test = create_dataset(X_test, IMAGE_SIZE)
```

```
Dataset Images shape: (1108, 150, 150, 3) size: 74,790,000
```

```
[31]: # number of different classes

      len(y_train.unique())
```

```
[31]: 12
```

```
[32]: # Source: https://www.kaggle.com/fmarazzi/
      ↪baseline-keras-cnn-roc-fast-5min-0-8253-lb

      # this is our cnn

      kernel_size = (3,3)
      pool_size= (2,2)
      first_filters = 32
      second_filters = 64
      third_filters = 128
```

```

dropout_conv = 0.3
dropout_dense = 0.3

model = Sequential()
model.add(Conv2D(first_filters, kernel_size, activation = 'relu',
                 input_shape = (IMAGE_SIZE, IMAGE_SIZE, 3)))
model.add(Conv2D(first_filters, kernel_size, activation = 'relu'))
#model.add(Conv2D(first_filters, kernel_size, activation = 'relu'))
model.add(MaxPooling2D(pool_size = pool_size))
model.add(Dropout(dropout_conv))

model.add(Conv2D(second_filters, kernel_size, activation = 'relu'))
model.add(Conv2D(second_filters, kernel_size, activation = 'relu'))
#model.add(Conv2D(second_filters, kernel_size, activation = 'relu'))
model.add(MaxPooling2D(pool_size = pool_size))
model.add(Dropout(dropout_conv))

model.add(Conv2D(third_filters, kernel_size, activation = 'relu'))
model.add(Conv2D(third_filters, kernel_size, activation = 'relu'))
#model.add(Conv2D(third_filters, kernel_size, activation = 'relu'))
model.add(MaxPooling2D(pool_size = pool_size))
model.add(Dropout(dropout_conv))

model.add(Flatten())
model.add(Dense(256, activation = "relu"))
model.add(Dropout(dropout_dense))
model.add(Dense(12, activation = "softmax"))

model.summary()

```

Layer (type)	Output Shape	Param #
conv2d_1 (Conv2D)	(None, 148, 148, 32)	896
conv2d_2 (Conv2D)	(None, 146, 146, 32)	9248
max_pooling2d_1 (MaxPooling2D)	(None, 73, 73, 32)	0
dropout_1 (Dropout)	(None, 73, 73, 32)	0
conv2d_3 (Conv2D)	(None, 71, 71, 64)	18496
conv2d_4 (Conv2D)	(None, 69, 69, 64)	36928
max_pooling2d_2 (MaxPooling2D)	(None, 34, 34, 64)	0

```

-----
dropout_2 (Dropout)          (None, 34, 34, 64)          0
-----
conv2d_5 (Conv2D)            (None, 32, 32, 128)         73856
-----
conv2d_6 (Conv2D)            (None, 30, 30, 128)         147584
-----
max_pooling2d_3 (MaxPooling2 (None, 15, 15, 128)          0
-----
dropout_3 (Dropout)          (None, 15, 15, 128)          0
-----
flatten_1 (Flatten)          (None, 28800)                0
-----
dense_1 (Dense)              (None, 256)                  7373056
-----
dropout_4 (Dropout)          (None, 256)                  0
-----
dense_2 (Dense)              (None, 12)                   3084
=====
Total params: 7,663,148
Trainable params: 7,663,148
Non-trainable params: 0
-----

```

```
[33]: model.compile(Adam(lr=0.0001), loss='binary_crossentropy',
                metrics=['accuracy'])
```

```
[34]: batch_size = 10
      epochs = 8
```

```
[36]: filepath = "model.h5"
      checkpoint = ModelCheckpoint(filepath, monitor='acc', verbose=1,
                                   save_best_only=True, mode='max')

      reduce_lr = ReduceLRonPlateau(monitor='acc', factor=0.5, patience=1,
                                     verbose=1, mode='max', min_lr=0.00001)

      callbacks_list = [checkpoint, reduce_lr]

      history = model.fit(x=x_train, y=train_y,
                          batch_size=batch_size,
                          validation_split=10,
                          epochs=epochs,
                          verbose=2,
                          callbacks=callbacks_list)
```

Epoch 1/8

```

Epoch 00000: acc improved from -inf to 0.92092, saving model to model.h5
633s - loss: 0.2382 - acc: 0.9209
Epoch 2/8
Epoch 00001: acc improved from 0.92092 to 0.93965, saving model to model.h5
686s - loss: 0.1558 - acc: 0.9396
Epoch 3/8
Epoch 00002: acc improved from 0.93965 to 0.95018, saving model to model.h5
724s - loss: 0.1275 - acc: 0.9502
Epoch 4/8
Epoch 00003: acc improved from 0.95018 to 0.95746, saving model to model.h5
728s - loss: 0.1102 - acc: 0.9575
Epoch 5/8
Epoch 00004: acc improved from 0.95746 to 0.96581, saving model to model.h5
741s - loss: 0.0906 - acc: 0.9658
Epoch 6/8
Epoch 00005: acc improved from 0.96581 to 0.97250, saving model to model.h5
745s - loss: 0.0734 - acc: 0.9725
Epoch 7/8
Epoch 00006: acc improved from 0.97250 to 0.97873, saving model to model.h5
756s - loss: 0.0562 - acc: 0.9787
Epoch 8/8
Epoch 00007: acc improved from 0.97873 to 0.98020, saving model to model.h5
767s - loss: 0.0524 - acc: 0.9802

```

```

[37]: acc = history.history['acc']
      loss = history.history['loss']

      epochs = range(1, len(acc) + 1)

      plt.plot(epochs, loss, 'bo', label='Training loss')
      plt.title('Training loss')
      plt.legend()
      plt.figure()

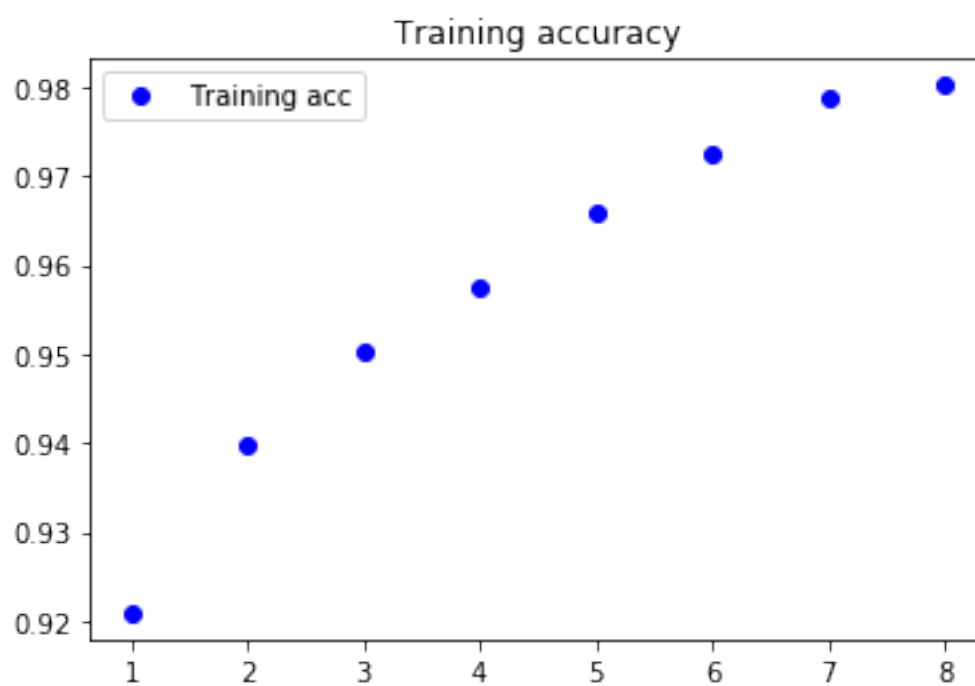
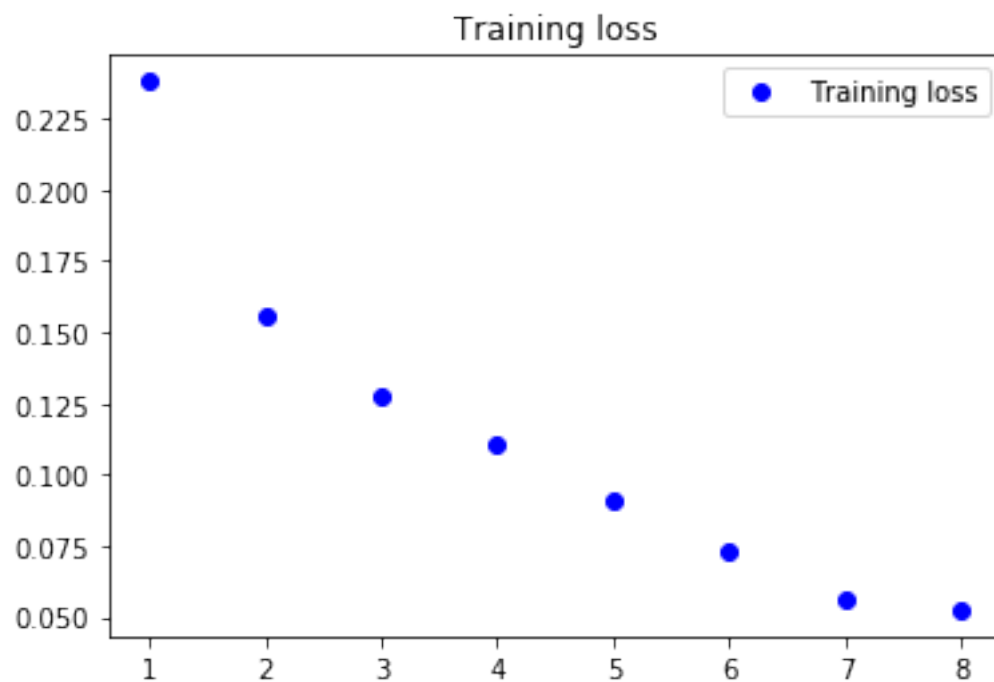
      plt.plot(epochs, acc, 'bo', label='Training acc')
      plt.title('Training accuracy')
      plt.legend()
      plt.figure()

```

```

[37]: <Figure size 432x288 with 0 Axes>

```



<Figure size 432x288 with 0 Axes>

```
[38]: # make a prediction

predictions = model.predict_classes(x_test, verbose=1)

1108/1108 [=====] - 49s

[39]: # inspect predictions
predictions

[39]: array([ 0,  6, 11, ...,  6,  3,  8], dtype=int64)

[40]: # transform target
encoder.transform(y_test)

[40]: array([ 6,  0, 11, ...,  6,  3,  3], dtype=int64)

[41]: cnf_matrix = confusion_matrix(encoder.transform(y_test), predictions)

[42]: # create a dict to map back the numbers onto the classes

tmp = pd.concat([y_test, pd.Series(encoder.transform(y_test))], axis=1)
tmp.columns = ['class_name', 'class_number']
tmp.drop_duplicates(inplace=True)
tmp.reset_index(drop=True, inplace=True)
tmp = pd.Series(tmp.class_name.values, index=tmp.class_number).to_dict()
tmp

[42]: {0: 'Black-grass',
      1: 'Charlock',
      2: 'Cleavers',
      3: 'Common Chickweed',
      4: 'Common wheat',
      5: 'Fat Hen',
      6: 'Loose Silky-bent',
      7: 'Maize',
      8: 'Scentless Mayweed',
      9: 'Shepherds Purse',
      10: 'Small-flowered Cranesbill',
      11: 'Sugar beet'}

[43]: # these we will display in the below matrix
abbreviation = ['BG', 'Ch', 'Cl', 'CC', 'CW', 'FH', 'LSB', 'M', 'SM', 'SP',
                ↪ 'SFC', 'SB']

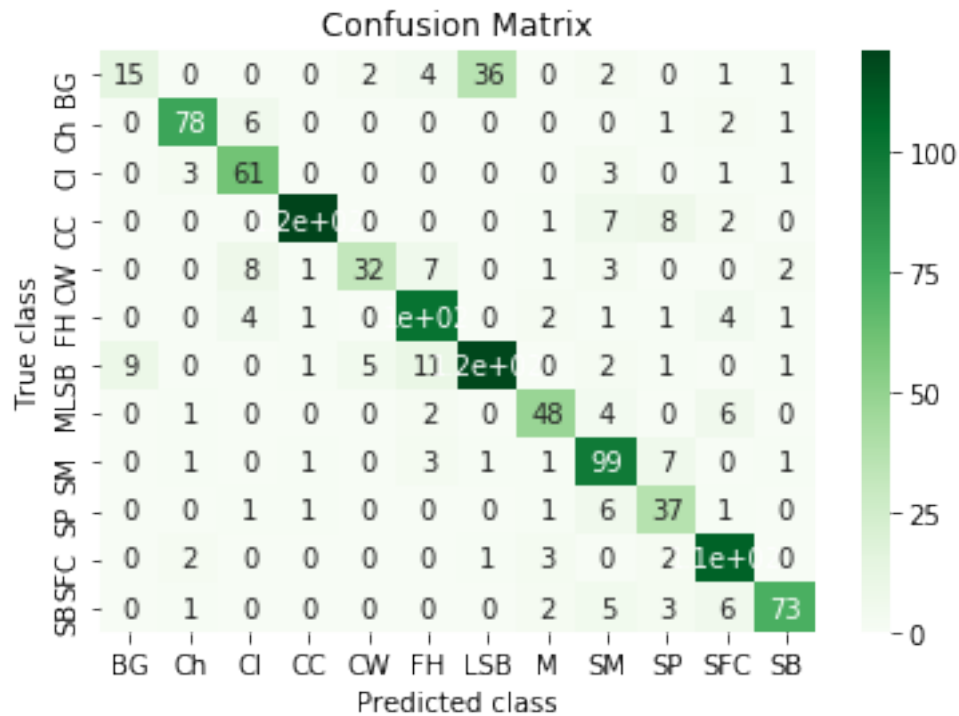
[44]: import seaborn as sns

fig, ax = plt.subplots(1)
```

```

ax = sns.heatmap(cnf_matrix, ax=ax, cmap=plt.cm.Greens, annot=True)
ax.set_xticklabels(abbreviation)
ax.set_yticklabels(abbreviation)
plt.title('Confusion Matrix')
plt.ylabel('True class')
plt.xlabel('Predicted class')
#fig.savefig('Confusion matrix.png', dpi=300)
plt.show();

```



```
[45]: from sklearn.metrics import accuracy_score
```

```

accuracy_score(encoder.transform(y_test), predictions, normalize=True,
               sample_weight=None)

```

```
[45]: 0.8095667870036101
```

```
[48]: from sklearn.metrics import classification_report
```

```
print(classification_report(encoder.transform(y_test), predictions))
```

	precision	recall	f1-score	support
0	0.62	0.25	0.35	61

1	0.91	0.89	0.90	88
2	0.76	0.88	0.82	69
3	0.96	0.87	0.91	139
4	0.82	0.59	0.69	54
5	0.79	0.88	0.83	117
6	0.76	0.80	0.78	150
7	0.81	0.79	0.80	61
8	0.75	0.87	0.80	114
9	0.62	0.79	0.69	47
10	0.83	0.93	0.88	118
11	0.90	0.81	0.85	90
avg / total	0.81	0.81	0.80	1108

```
[ ]:
```