Fraunhofer FOKUS

Deep Encode

Intermediate Presentation

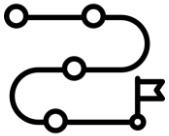
By Ruihan, Julio and Vinzenz

Intermediate Presentation

- Wrap Up: Problem Statement

- Details and preliminary results
  - First Demo

- Updated Schedule/ next Steps



Problem Statement

- Convolutional Neural Networks, Gradient Boosting Decision Tree and Linear Regression
- predict VMAF values
- plot data points(bitrate, predicted VMAF) and find the convex hull

Details and preliminary results

Gradient Boosting Decision Tree

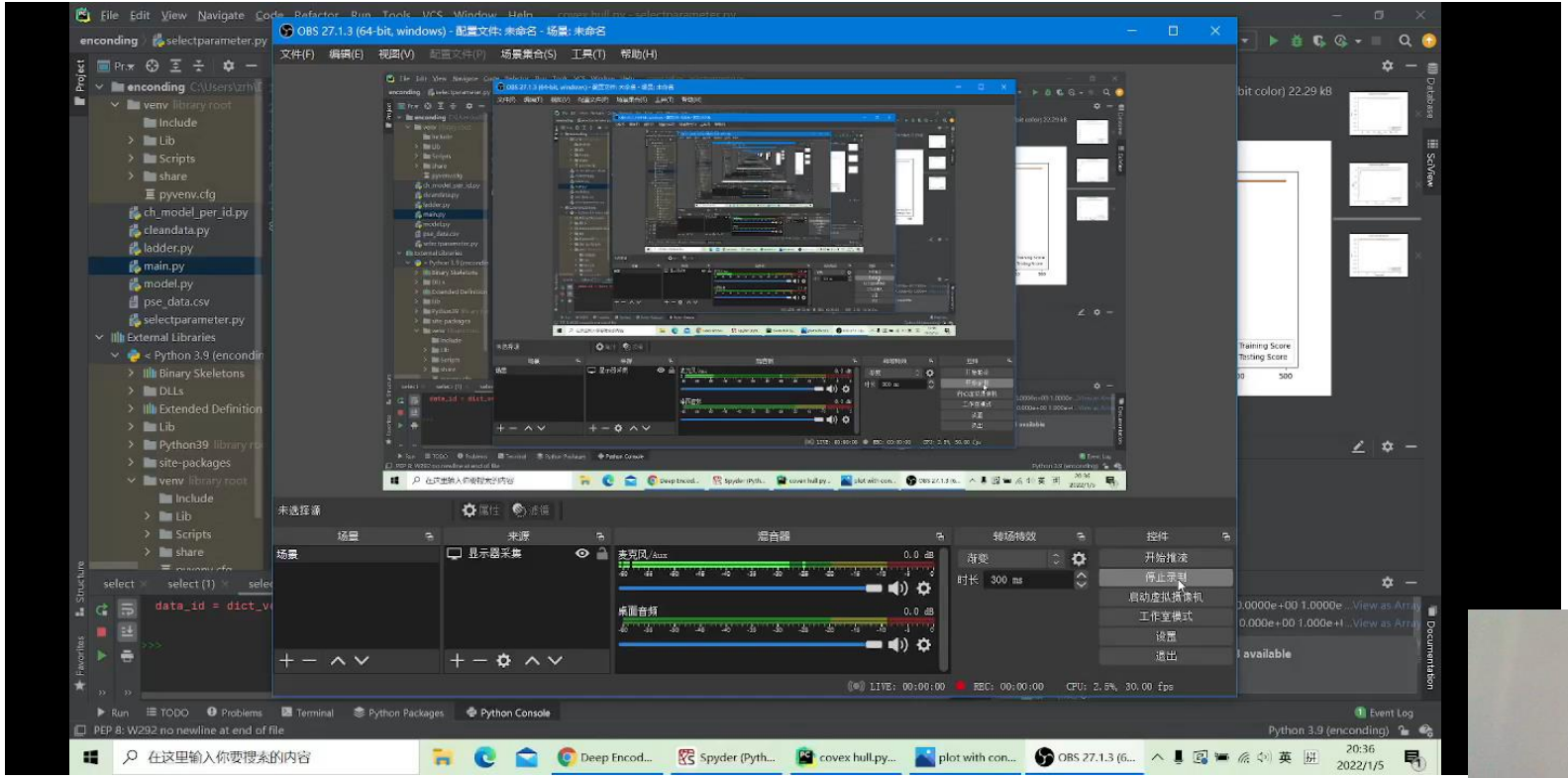
Input variables: e_crf, e_width, e_height, e_codec_profile, e_codec_level,

t_average_bitrate (Correlation > 0.1)

average MAE for all Video ID: 2.262

average score for all Video ID: 0.989

Demo - Python Gradient Boosting Decision Tree



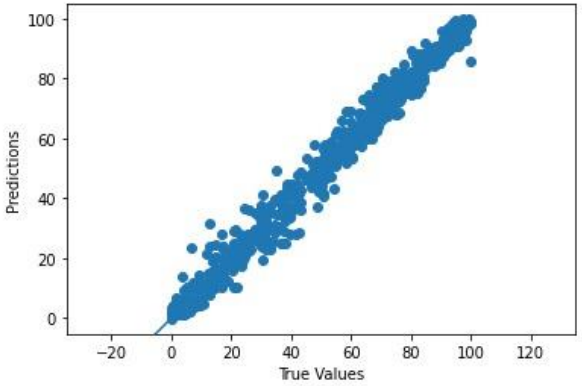
Details and preliminary results

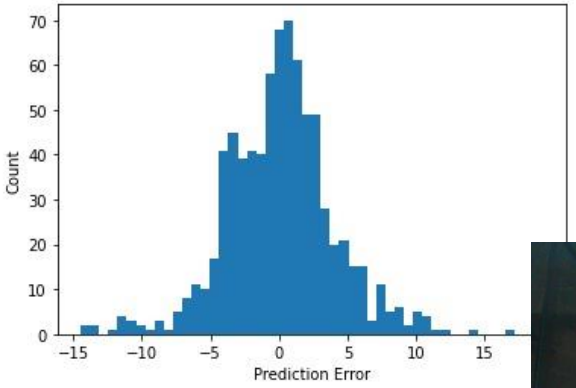
Convolutional Neural Network

Absolute Value of Correlation with VMAF>0.04:
e_crft, t_average_bitrate, e_height, e_width, e_scan_type, e_codec_level, e_codec_profile, c_si

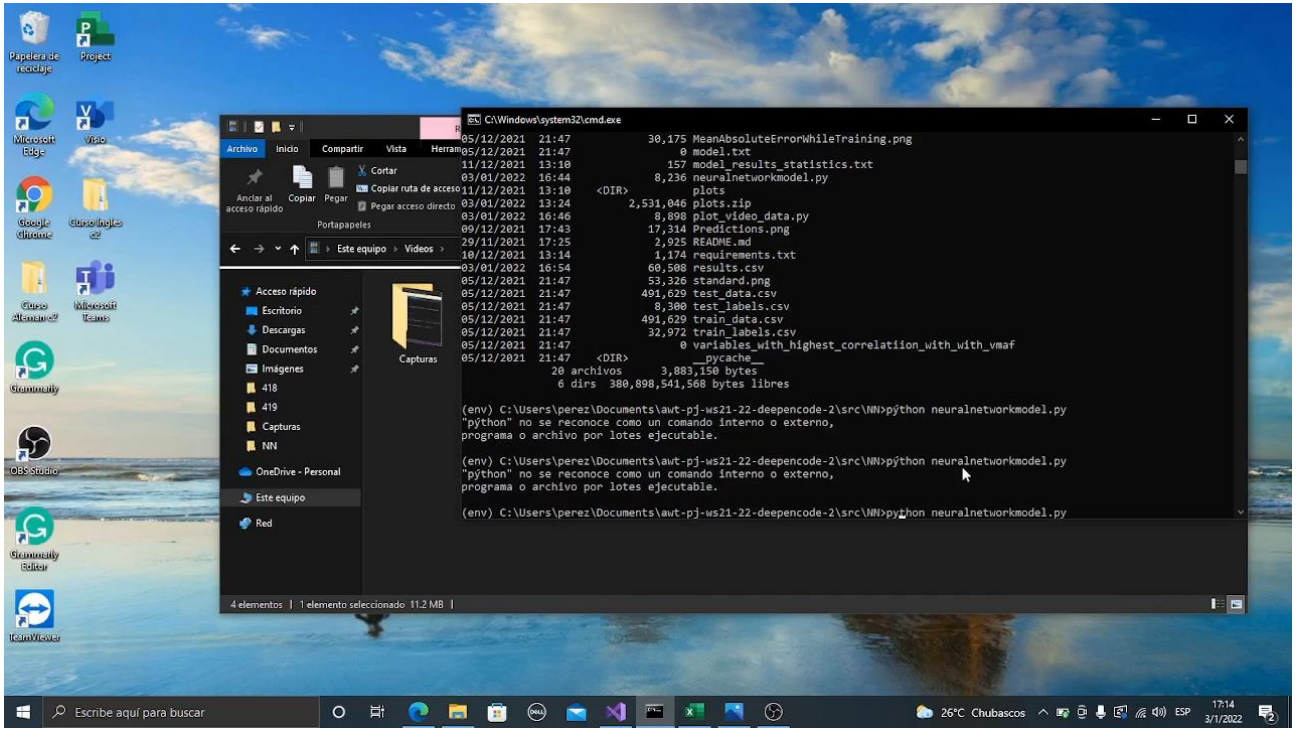
number of tests = 200, mean absolute error :2.969299849271774, standard_error :0.01193681736466972, lower_interval :2.9573630319071045,upper_interval :2.981236666271774

Variables used : e_crft, t_average_bitrate, e_height, e_width, e_scan_type, e_codec_level, e_codec_profile, c_si





Demo - Python


C:\Windows\system32\cmd.exe
05/12/2021 21:47 30,175 MeanAbsoluteErrorWhileTraining.png
05/12/2021 21:47 0 model.txt
11/12/2021 13:10 157 model_results_statistics.txt
03/01/2022 16:44 8,236 neuralnetworkmodel.py
11/12/2021 13:10 <DIR> plots
03/01/2022 13:24 2,531,046 plots.zip
03/01/2022 16:46 8,898 plot_video_data.py
09/12/2021 17:43 17,314 Predictions.png
29/11/2021 17:25 2,925 README.md
10/12/2021 13:14 1,174 requirements.txt
03/01/2022 16:54 60,508 results.csv
05/12/2021 21:47 53,326 standard.png
05/12/2021 21:47 491,620 test_data.csv
05/12/2021 21:47 8,300 test_labels.csv
05/12/2021 21:47 491,629 train_data.csv
05/12/2021 21:47 32,972 train_labels.csv
05/12/2021 21:47 0 variables_with_highest_correlatiion_with_with_vmaf
05/12/2021 21:47 <DIR> __pycache__
20 archivos 3,883,150 bytes
6 dirs 380,898,541,568 bytes libres
(env) C:\Users\perez\Documents\awt-pj-ws21-22-deepencode-2\src\NN>pýthon neuralnetworkmodel.py
"pýthon" no se reconoce como un comando interno o externo,
programa o archivo por lotes ejecutable.
(env) C:\Users\perez\Documents\awt-pj-ws21-22-deepencode-2\src\NN>pýthon neuralnetworkmodel.py
"pýthon" no se reconoce como un comando interno o externo,
programa o archivo por lotes ejecutable.
(env) C:\Users\perez\Documents\awt-pj-ws21-22-deepencode-2\src\NN>python neuralnetworkmodel.py
Este equipo
Videos
Acceso rápido
Escritorio
Descargas
Documentos
Imágenes
418
419
Capturas
NN
OneDrive - Personal
Este equipo
Red
4 elementos | 1 elemento seleccionado 11.2 MB
Escribe aquí para buscar
26°C Chubascos
ESP
17:14
3/1/2022

Details and preliminary results

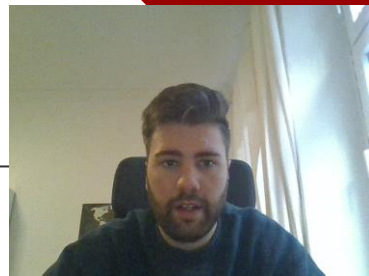
Lineare Regression

Correlation >0.250: e_crf, t_average_bitrate, e_width, e_height, e_codec_level, e_scan_typeNumber, e_codec_profileNumber

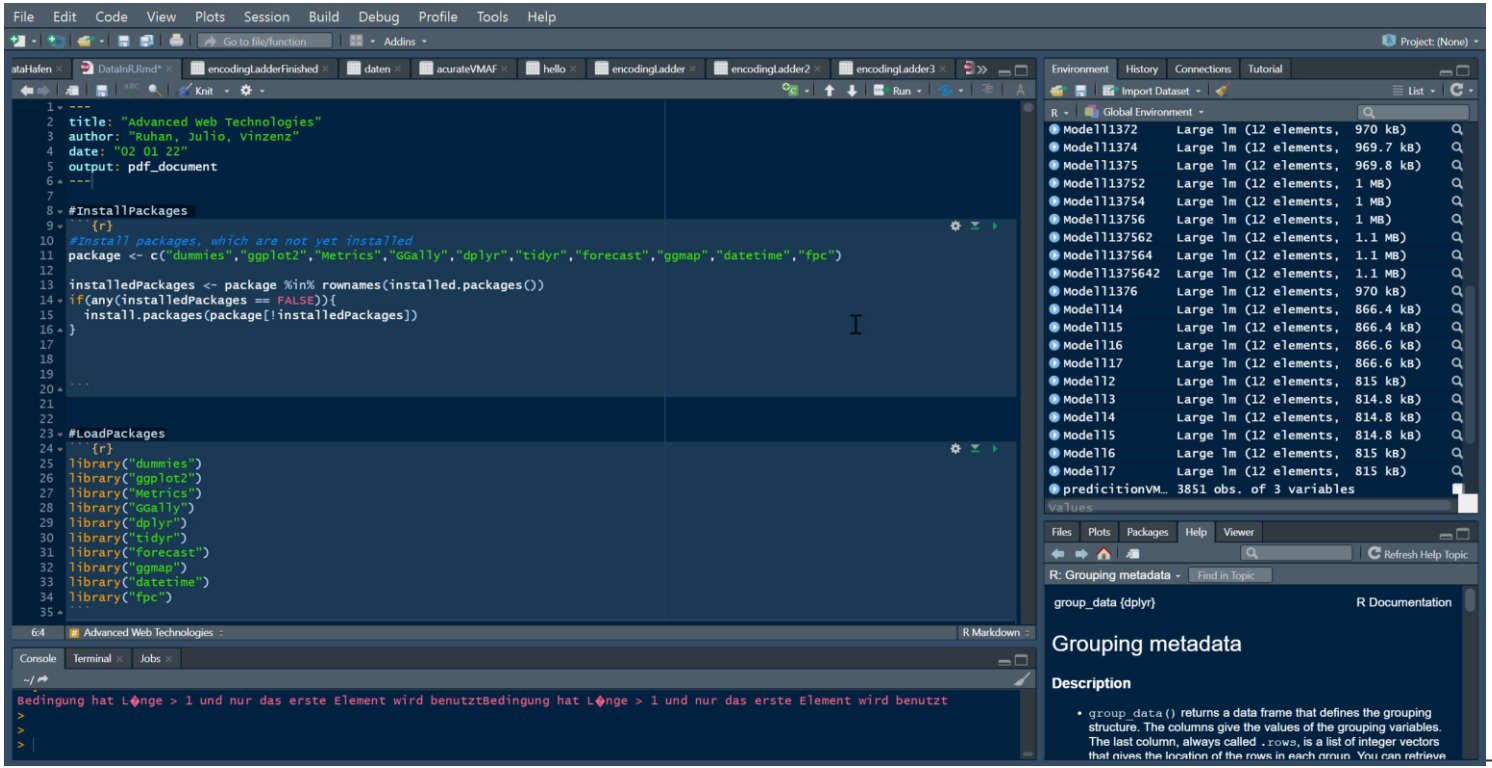
MAE: 7.1028

sMAPE: 0.3504

Model: e_crf + e_width + e_codec_profileNumber + e_codec_level + e_scan_typeNumber + e_height



Demo - R


File Edit Code View Plots Session Build Debug Profile Tools Help
title: "Advanced Web Technologies"
author: "Ruhan, Julio, Vinzenz"
date: "02 01 22"
output: pdf_document
#InstallPackages
#Install packages, which are not yet installed
package <- c("dummies","ggplot2","Metrics","GGally","dplyr","tidyr","forecast","ggmap","datetime","fpc")
installedPackages <- package %in% rownames(installed.packages())
if(any(installedPackages == FALSE)){
install.packages(package[!installedPackages])
}
#LoadPackages
library("dummies")
library("ggplot2")
library("Metrics")
library("GGally")
library("dplyr")
library("tidyr")
library("forecast")
library("ggmap")
library("datetime")
library("fpc")
Bedingung hat L◆nge > 1 und nur das erste Element wird benutztBedingung hat L◆nge > 1 und nur das erste Element wird benutzt
Environment History Connections Tutorial
Model11372 Large lm (12 elements, 970 kB)
Model11374 Large lm (12 elements, 969.7 kB)
Model11375 Large lm (12 elements, 969.8 kB)
Model113752 Large lm (12 elements, 1 MB)
Model113754 Large lm (12 elements, 1 MB)
Model113756 Large lm (12 elements, 1 MB)
Model1137562 Large lm (12 elements, 1.1 MB)
Model1137564 Large lm (12 elements, 1.1 MB)
Model11375642 Large lm (12 elements, 1.1 MB)
Model11376 Large lm (12 elements, 970 kB)
Model114 Large lm (12 elements, 866.4 kB)
Model115 Large lm (12 elements, 866.4 kB)
Model116 Large lm (12 elements, 866.6 kB)
Model117 Large lm (12 elements, 866.6 kB)
Model12 Large lm (12 elements, 815 kB)
Model13 Large lm (12 elements, 814.8 kB)
Model14 Large lm (12 elements, 814.8 kB)
Model15 Large lm (12 elements, 814.8 kB)
Model16 Large lm (12 elements, 815 kB)
Model17 Large lm (12 elements, 815 kB)
predicitionVM… 3851 obs. of 3 variables
Files Plots Packages Help Viewer
R: Grouping metadata
group_data {dplyr}
R Documentation
Grouping metadata
Description
group_data() returns a data frame that defines the grouping structure. The columns give the values of the grouping variables. The last column, always called .rows, is a list of integer vectors

Schedule / next Steps