Deep Encode

Final Presentation

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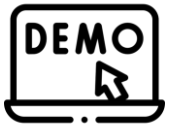
Final Presentation

- Wrap Up: Problem Statement

- Final Results and realization Details

- Final Demo



Wrap up: Problem Statement

- Find the most accurate model to predict the VMAF
- Evaluate how different resolutions outperform others at different bitrates
- Get the encoding ladder for each video
- Convolutional Neural Network, Gradient Boosting Decision Tree and Linear Regression
- Evaluate models

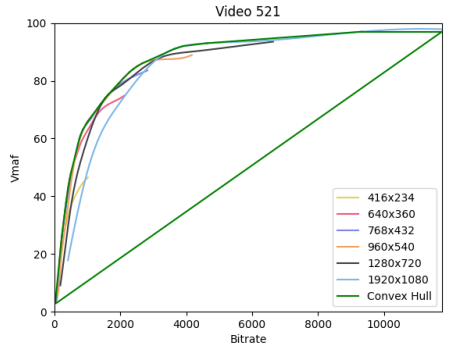
Final Results and realization Details

	Convolutional Neural Network	Gradient Boosting Decision Tree	Linear Regression
MAE	2.969	1.5429	7.1028

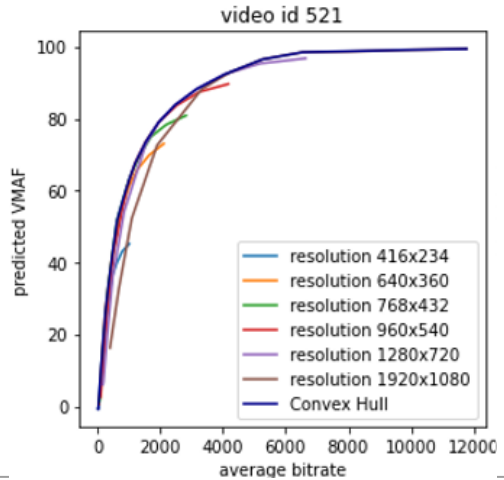
Variables Used: e_crf, e_width, e_height, e_codec_profile, e_codec_level, t_average_bitrate

Final Results and realization Details 521 Plot

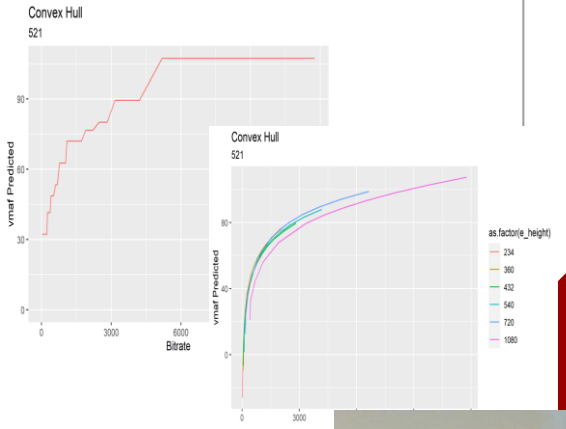
Convolutional Neural Network



Gradient Boosting Decision Tree



Linear Regression



Final Results and realization Details 521 Encoding Ladder

Convolutional Neural Network

Bitrate (kbps)	Resolution	VMAF (Predicted)
235	768x432	35.685078
375	640x360	46.575527
560	768x432	53.59677
750	768x432	65.7068
1050	768x432	76.12955
1750	768x432	80.317314
2350	960x540	85.26026
3000	1920x1080	92.60407
4300	1920x1080	93.325264
5800	1920x1080	97.8191

Gradient Boosting Decision Tree

resolution width	height	bitrate	VMAF
416	234	123	11
640	360	470	42
768	432	804	57
960	540	1201	68
1280	720	1944	79

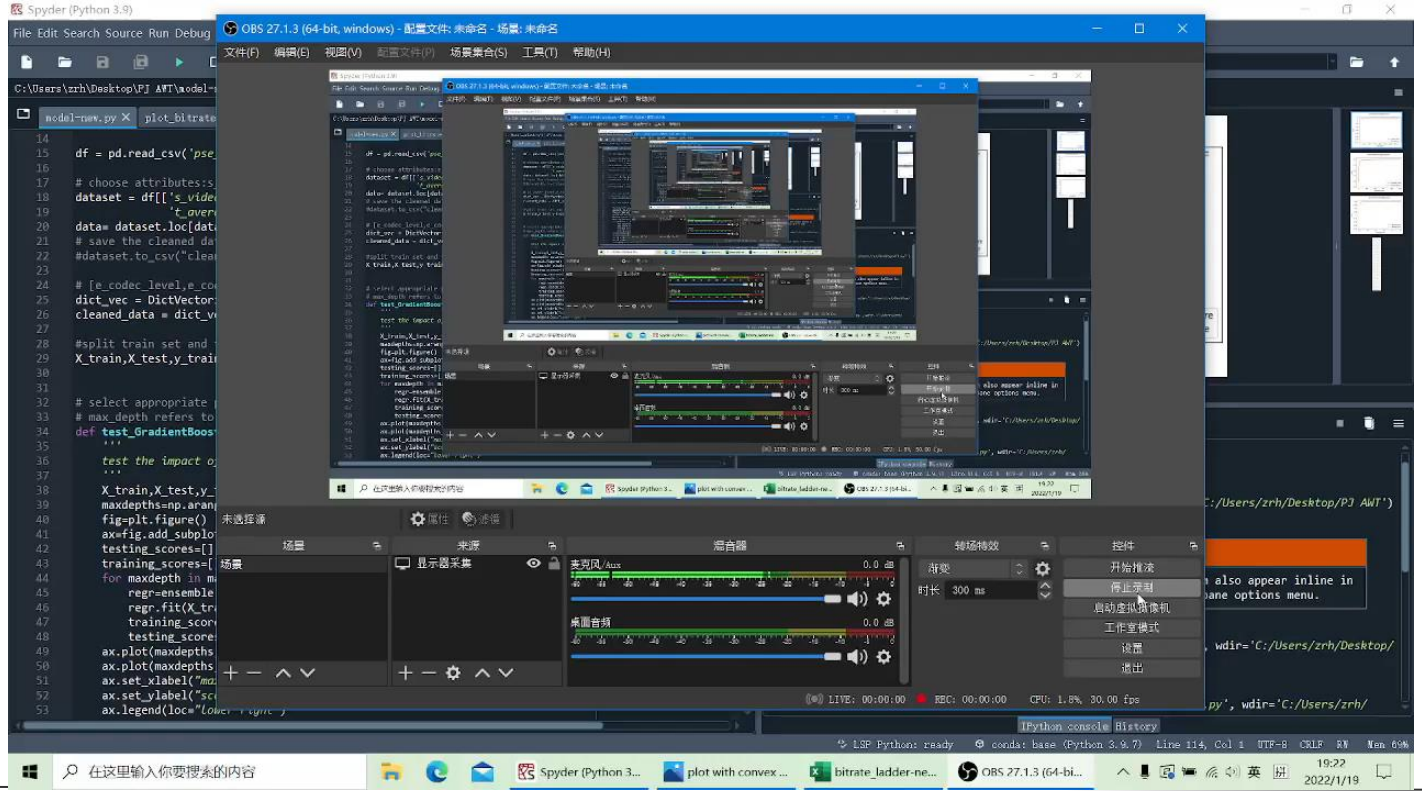
Linear Regression

ï..s_video_id	bitrate	resolution	maxVMAF
521	235	1280x720	32.21934
521	375	1280x720	41.55553
521	560	1920x1080	48.66075
521	750	1920x1080	53.32884
521	1050	1280x720	62.66503
521	1750	1920x1080	72.00121
521	2350	1920x1080	76.66930
521	3000	1280x720	80.11126
521	4300	1920x1080	89.44744
521	5800	1920x1080	107.37352

Finals Results and realization Details

- Old fashion Machine Learning Algorithm much worse than the other newer
- Quite big differences between different videoID → room for optimization
- Python is easier to use than R

Final Demo


Spyder (Python 3.9)
File Edit Search Source Run Debug
OBS 27.1.3 (64-bit, windows) - 配置文件: 未命名 - 场景: 未命名
文件(F) 编辑(E) 视图(V) 配置文件(P) 场景集合(S) 工具(T) 帮助(H)
场景
来源
显示器采集
混音器
麦克风/Aux
桌面音频
转场特效
渐变
时长 300 ms
控件
开始推流
停止录制
启动虚拟摄像机
工作室模式
设置
退出
LIVE: 00:00:00
REC: 00:00:00
CPU: 1.8%, 30.00 fps
在这里输入你要搜索的内容
Spyder (Python 3...
plot with convex ...
bitrate_ladder-ne...
OBS 27.1.3 (64-bi...
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