HW4

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Due date: 2024/1/12 23:59

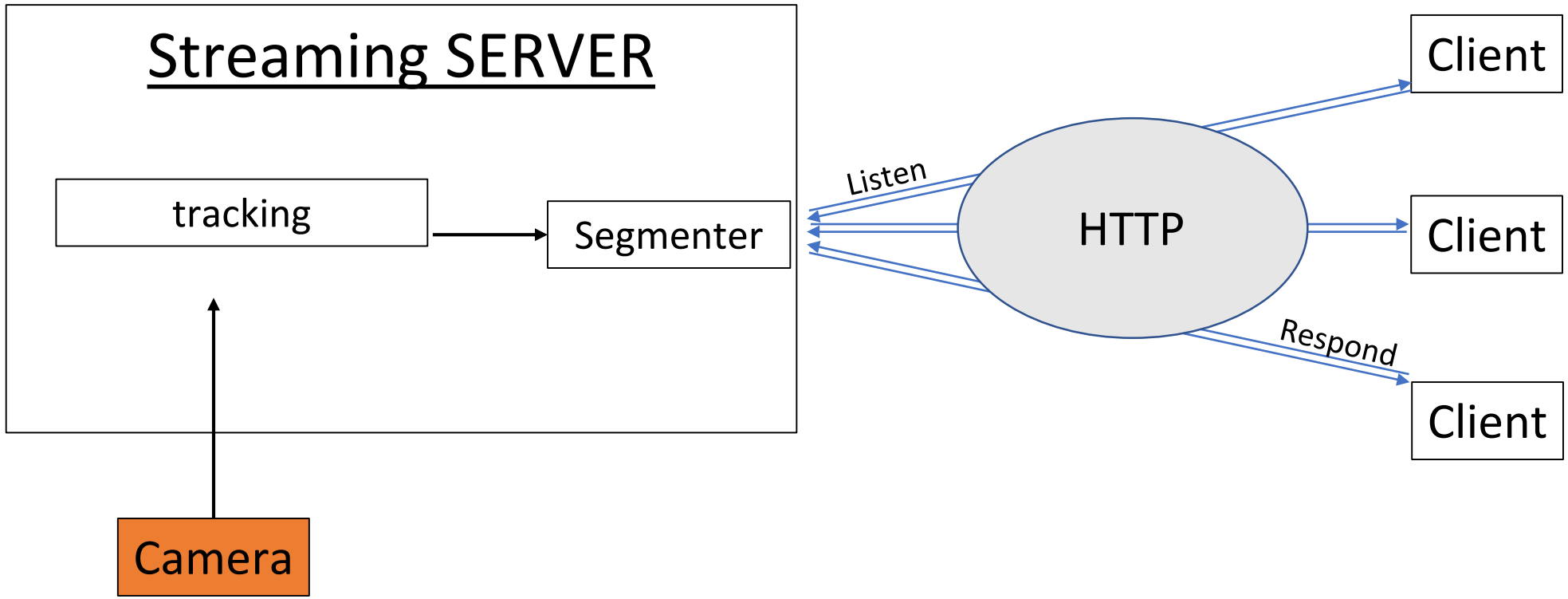
Outline

- Introduction
- Grading Policy
- Part1
- Part2
- Part3
- Part4
- Rules & Penalty
- Reference

Introduction

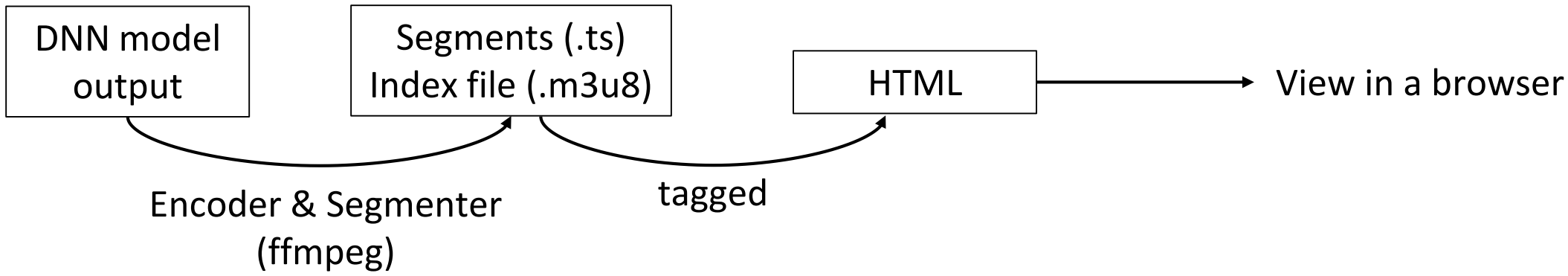
- You are asked to build a Live Streaming Server and perform tasks using deep learning model.
- You can team up with **at most 3 people** doing this project.

- Overall architecture



Introduction

- You can create live streaming in this way.



Grading Policy

Part1:

Live Streaming (35 points)

Part2:

Deep Learning Model (30 points)

Part3:

Extensions (20 points)

Part4:

Demo(15 points)

We will check the Part1, Part2, Part3 in the demo.

Part1

Part 1 Live Streaming (30 points)

1. You can use any tool to build your streaming server, such as python http.server, flask, etc.
2. Directly using Twitch, YouTube, Live house, or OBS is NOT allowed.

Note that

- The encoded file must be a LIVE video segment, thus you will need a camera.
- You should avoid large latency. (<1 sec)

Part2

Part 2 Deep Learning Network (30 points)

Use a deep learning network to achieve this part.

Object Tracking

- You can use any tracking model
- or use TransTrack
- https://github.com/PeizeSun/TransTrack

Part3

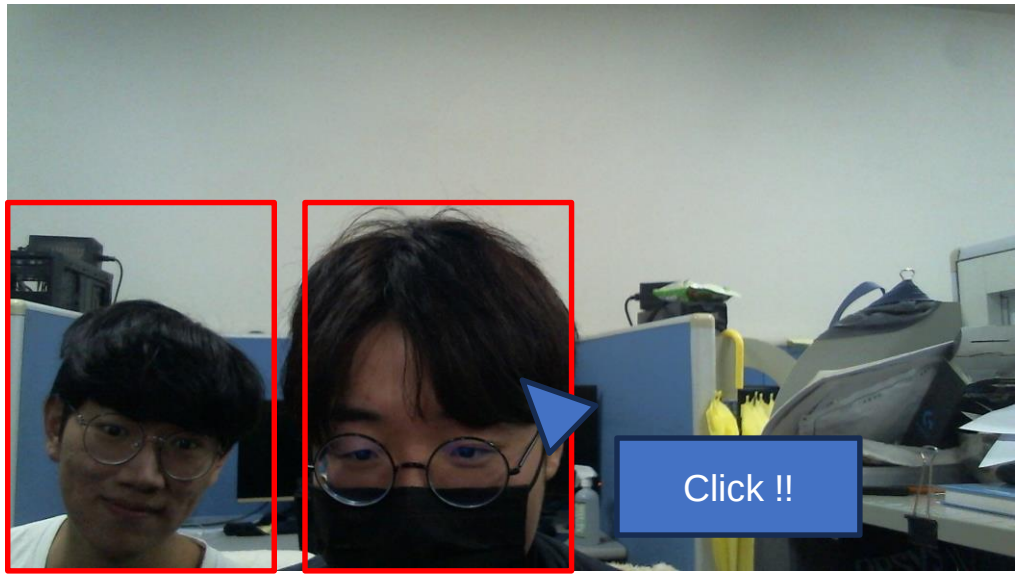
Part 3 Extensions (20 points)

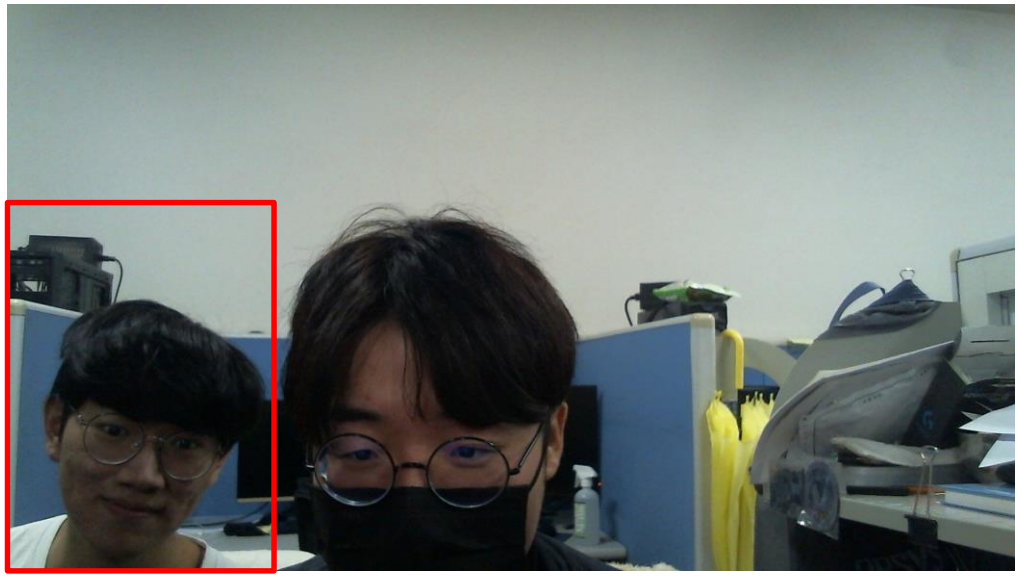
You should provide a user interface (e.g., mouse) to specify objects to track.

- User can choose one or multiple objects on the screen to track
  → the tracked objects are enclosed with bounding boxes
- User can cancel the selection of any object that is currently under tracking.

Note

- You can use *javascript* to get the mouse coordinate and use *flask* to pass to python.





Part4

Part 4 Demo(15 point)

- Write a report to introduce your architecture or modify. (less than 2 pages)
- Make a simple presentation for us using the report. For example , “tell me how to combine tracking models with live streaming” or “tell me about your changes for the transtrack code.”
- We will ask some questions from your presentation, report and code.
- We will have DEMO during 1/8-1/12 at EC637.
- Please go to Google sheet and fill demo time you prefer.

Part4

B	C	D	E	F	G	H	I	J	K	L
team	member1	member2	member3	Date & time	demo	part 1 (35)	part 2 (30)	part3 (20)	part4 (15)	total
EXAMPLE	熊問安	羅成圓		12/24 - 13:00	V	...	...	...	...	87
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Rules & Penalty

Submission

Source code

- Web server (streaming) related code (e.g. flask, html, javascript)
- Deep learning related code (except model weight)

Zip these into a folder name “teamID.zip”, and then upload to E3 before Demo.

Penalty

Late penalty – 20% per day

- 1 day => 80%, 2days => 60%.....

Notes

- One submission for a team before demo.
- You will lose points for any violation or incomplete requirement.
- If there is any question, please contact us via E3.
- Good Luck!

Reference

Transtrack

https://github.com/PeizeSun/TransTrack

Flask

https://flask.palletsprojects.com/en/3.0.x/

https://dormousehole.readthedocs.io/en/latest/

HTML mouse event

https://www.delftstack.com/zh-tw/howto/javascript/javascript-mouse-position/

ffmpeg-python

https://github.com/kkroening/ffmpeg-python

https://kkroening.github.io/ffmpeg-python/

ffmpeg-python-streaming

https://github.com/hadronepoch/python-ffmpeg-video-streaming

Reference

Never_loses
https://www.twitch.tv/never_loses

Roger9527
https://www.twitch.tv/roger9527