

CS-534 ADVANCED OBJECT-ORIENTED PROGRAMMING DESIGN PATTERN

Deep Learning Pipeline for Deployment
Yakup Görür
Emre Sümengen

CONTENTS

Background Information

- Deep Learning,
- GPU Intensive Jobs,
- Computer Vision Application,
- Data Reading

Structure

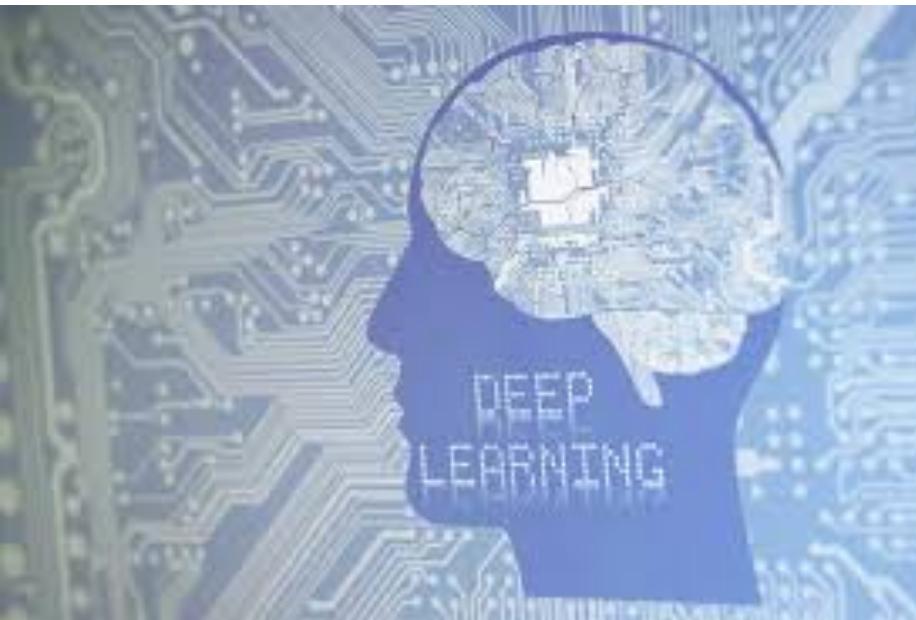
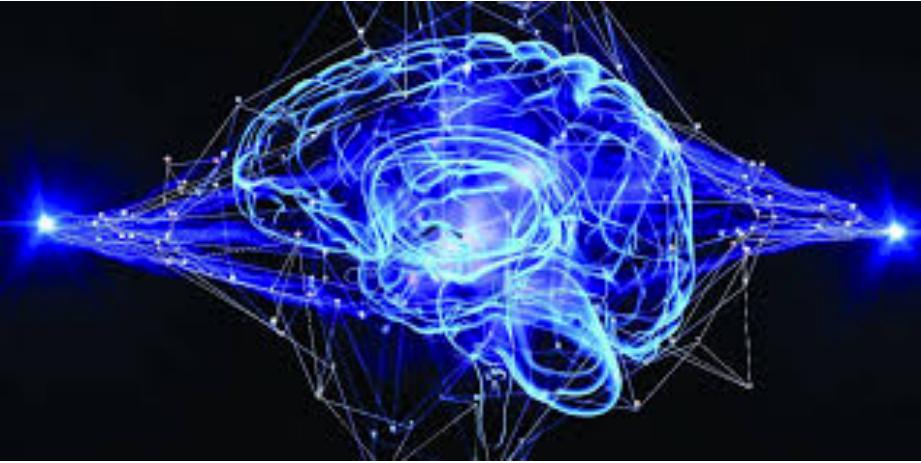
- Intent of Development Process,
- Project parts

Project Realization

- Used Technologies,
- Project Development Process,
- API Design Process

BACKGROUND INFORMATION

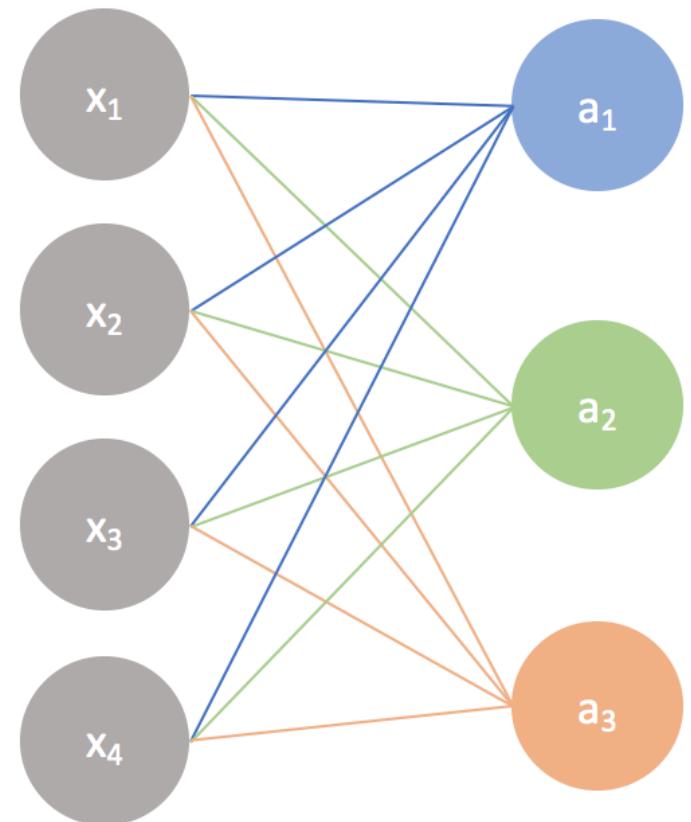
What is Deep Learning,
CPU or GPU works,
Computer Vision Applications,
Data Reading



Input layer

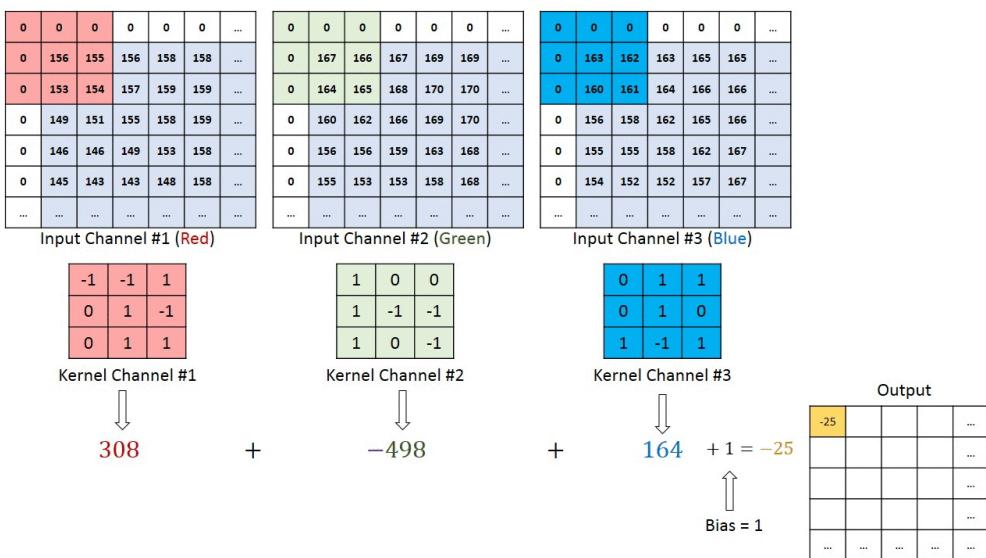
Output layer

A simple neural network

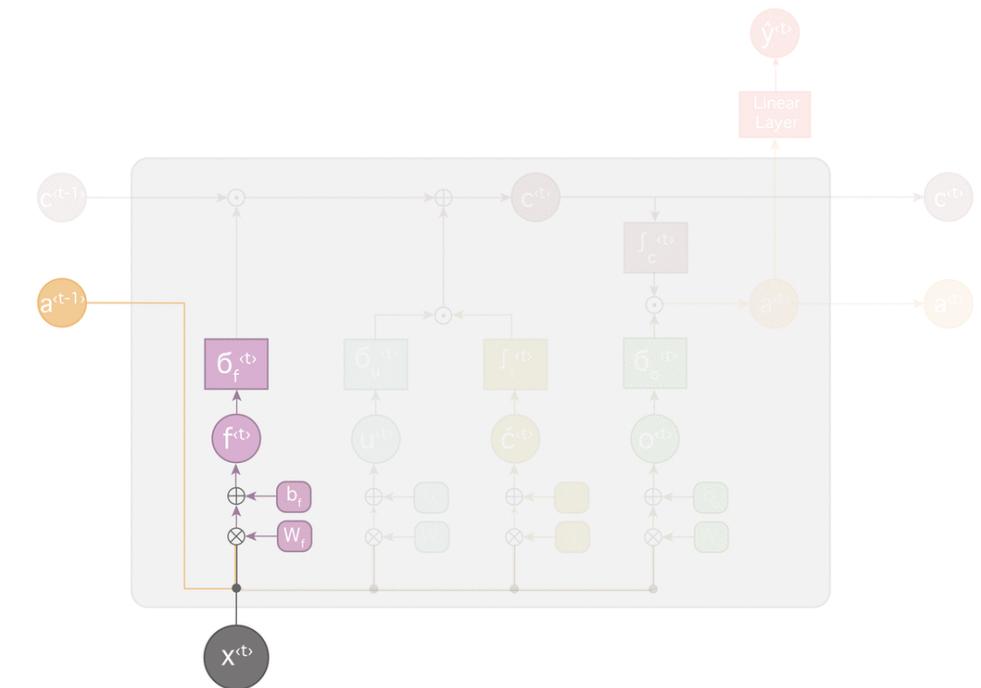


$$\begin{bmatrix} w_1 & w_2 & w_3 & w_4 \\ w_1 & w_2 & w_3 & w_4 \\ w_1 & w_2 & w_3 & w_4 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} + \begin{bmatrix} b \\ b \\ b \end{bmatrix} = \begin{bmatrix} w_1x_1 + w_2x_2 + w_3x_3 + w_4x_4 + b \\ w_1x_1 + w_2x_2 + w_3x_3 + w_4x_4 + b \\ w_1x_1 + w_2x_2 + w_3x_3 + w_4x_4 + b \end{bmatrix} \xrightarrow{\text{activation}} \begin{bmatrix} a_1 \\ a_2 \\ a_3 \end{bmatrix}$$

DEEP LEARNING CELLS

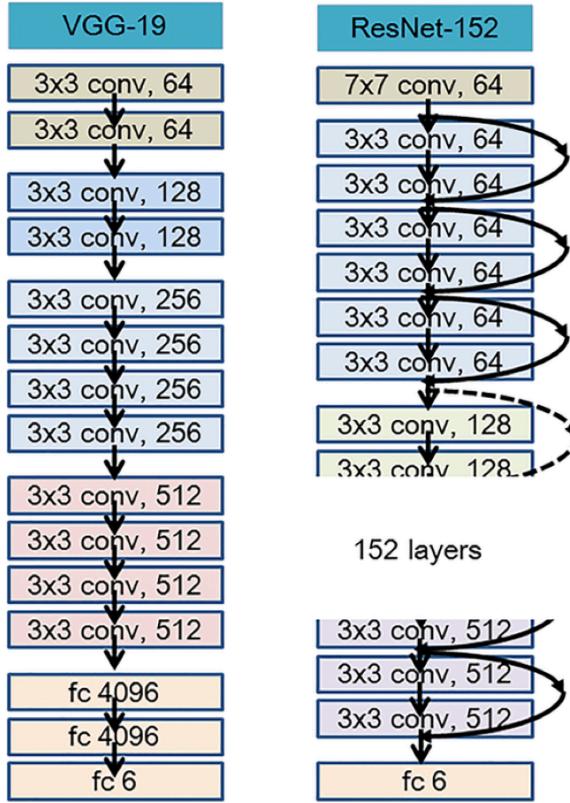


CNN
(GENERALLY- COMPUTER VISION)



LSTM
GENERALLY- NLP

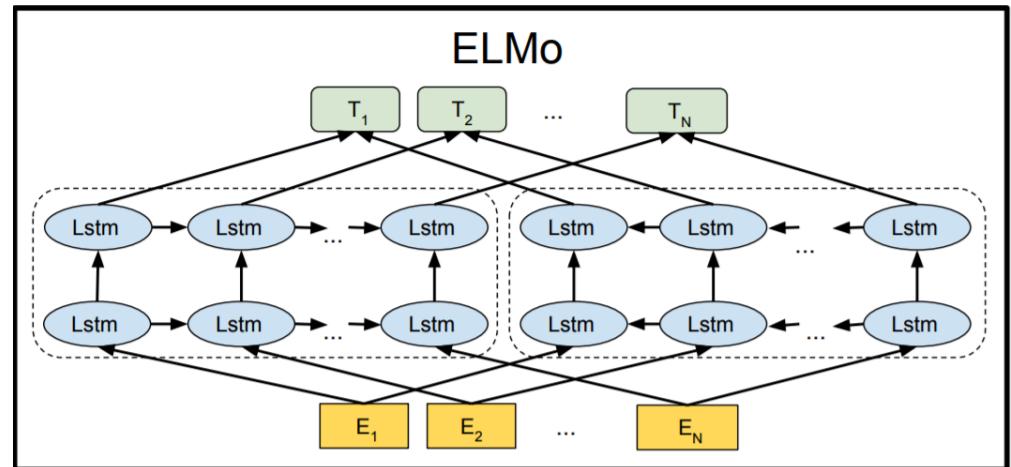
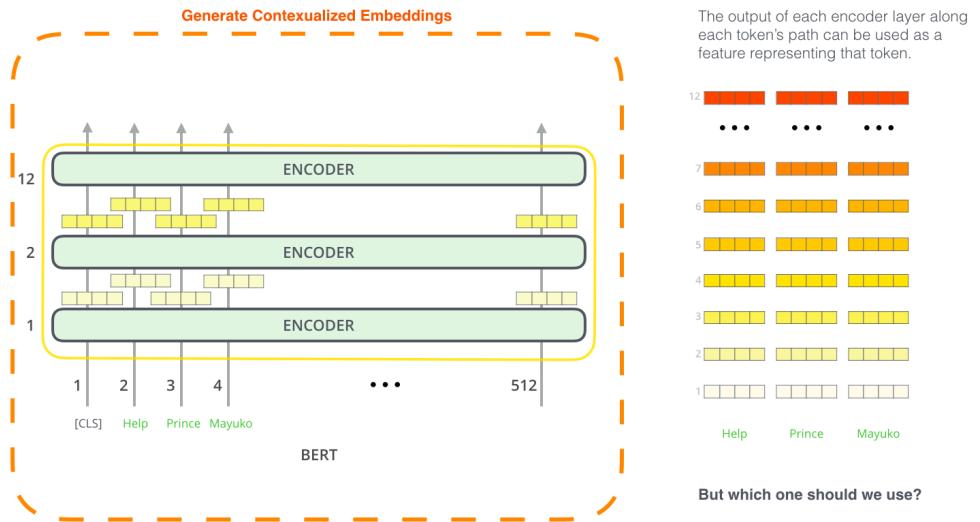
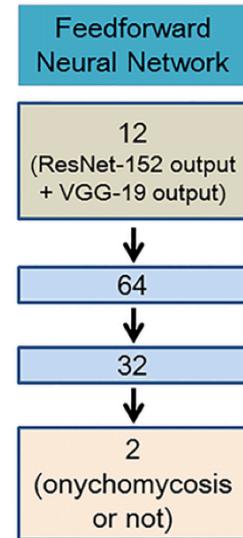
DEEP LEARNING MODELS



VGG & RESNET CNN
BLOCKS



Deep Learning Models run on GPU



ELMO LSTM BLOCKS

PREPROCESS



Image Resizing

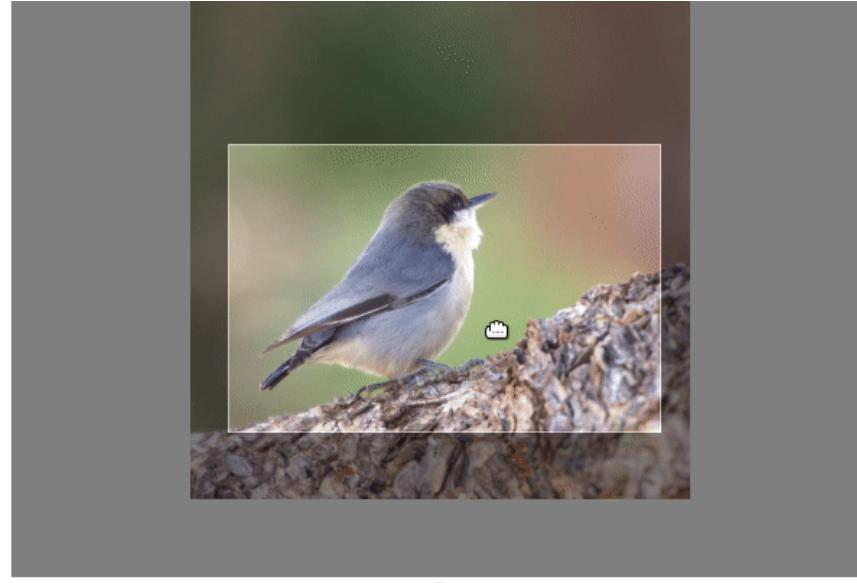
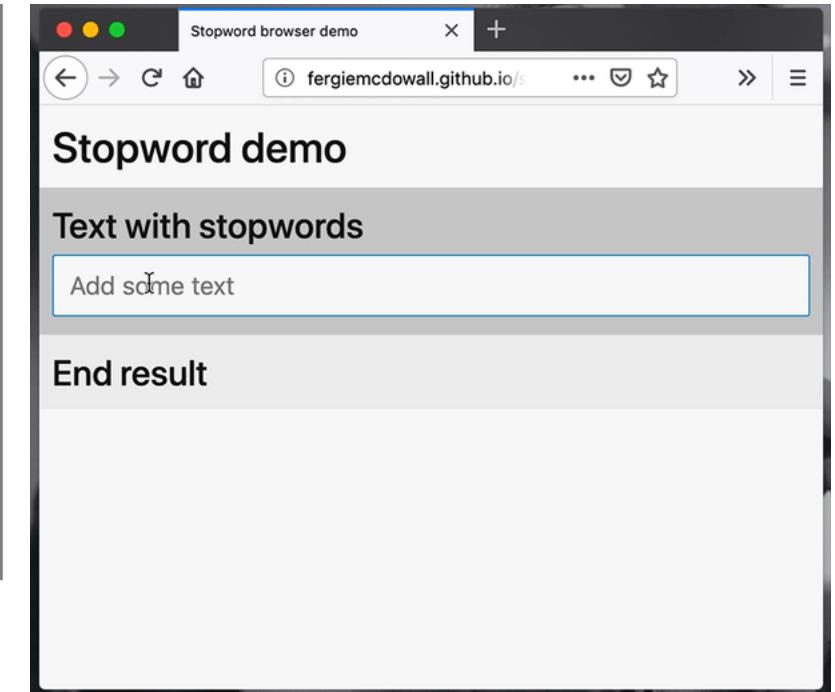


Image Cropping



Removing StopWords

STRUCTURE



Intend of Development Process

CLASSICAL DL PIPELINE

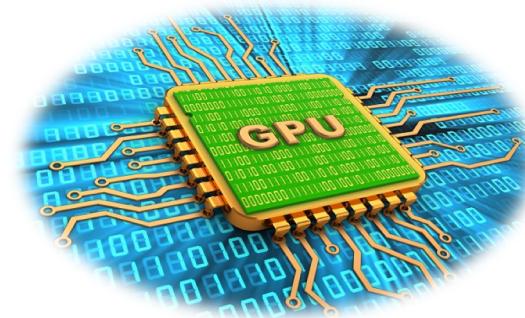
READ DATA



PREPROCESS



DL MODEL



CLASSICAL DL PIPELINE WITH 2 MODEL

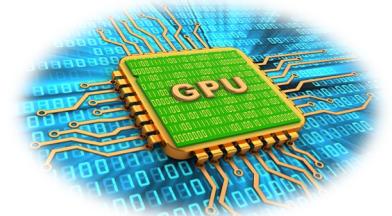
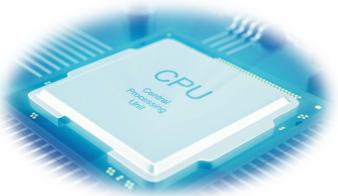
READ DATA

PREPROCESS1

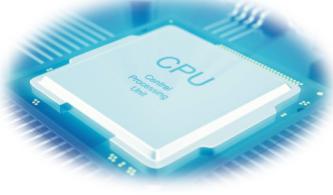
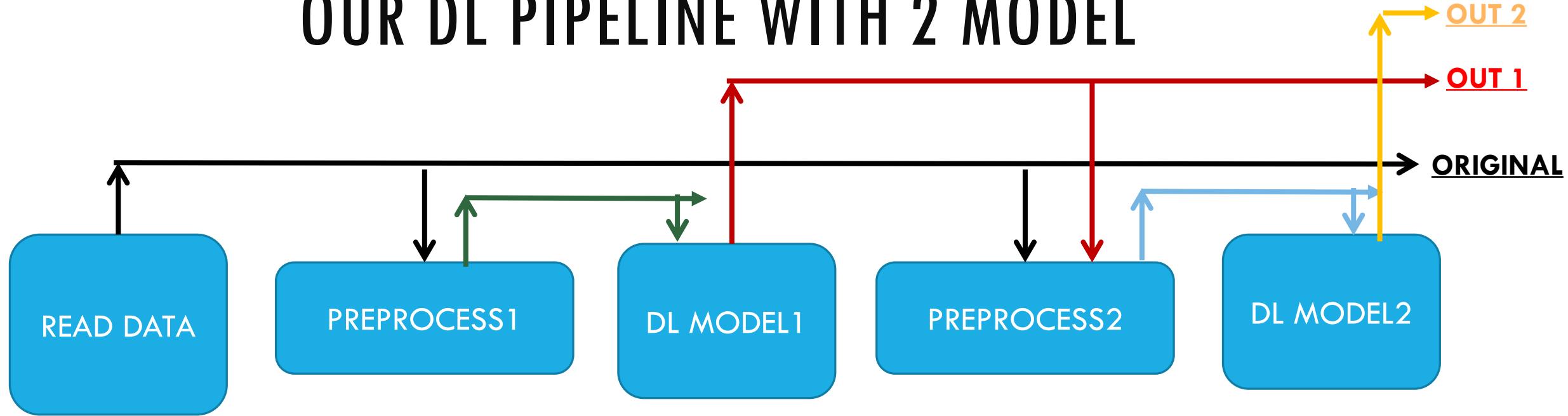
DL MODEL1

PREPROCESS2

DL MODEL2



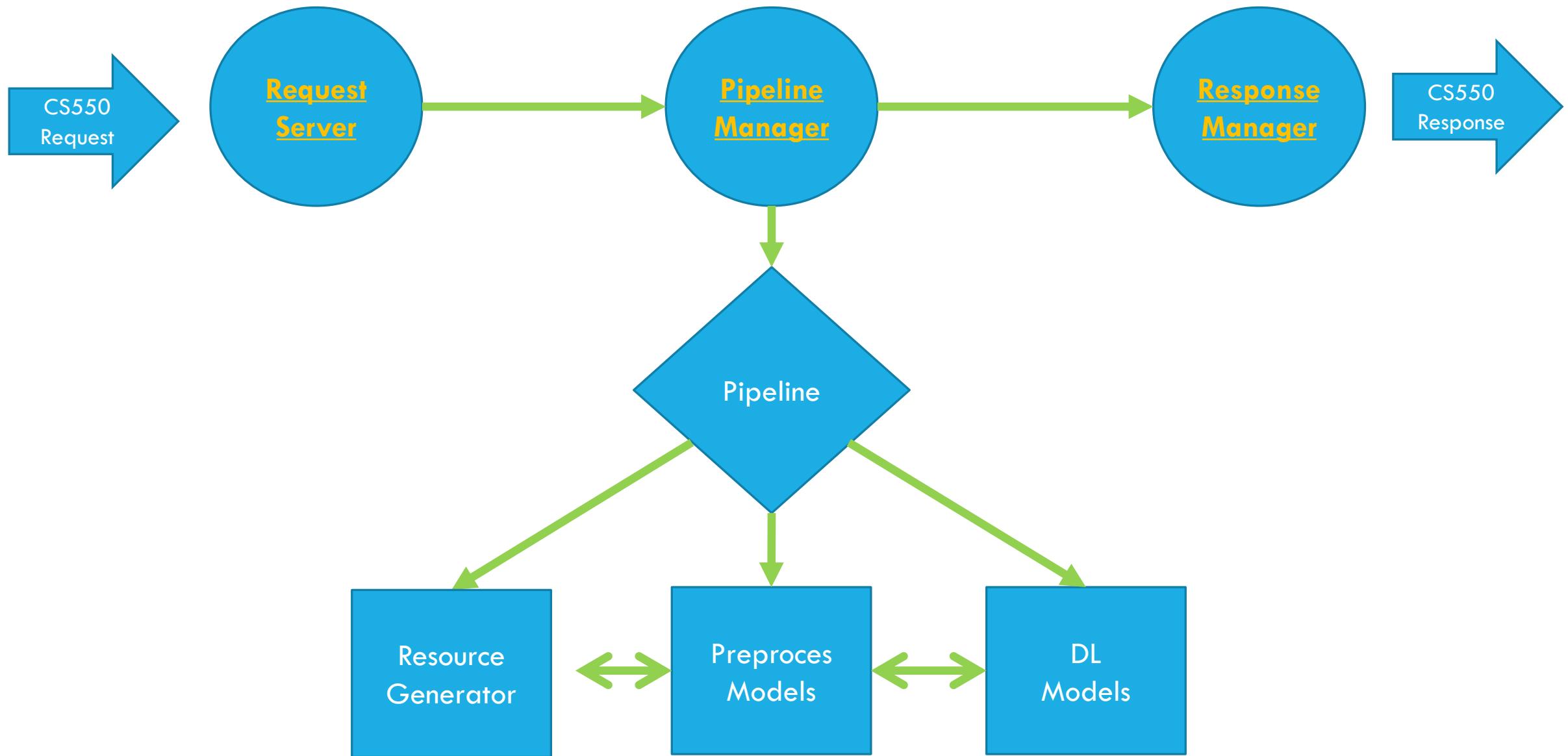
OUR DL PIPELINE WITH 2 MODEL



STRUCTURE

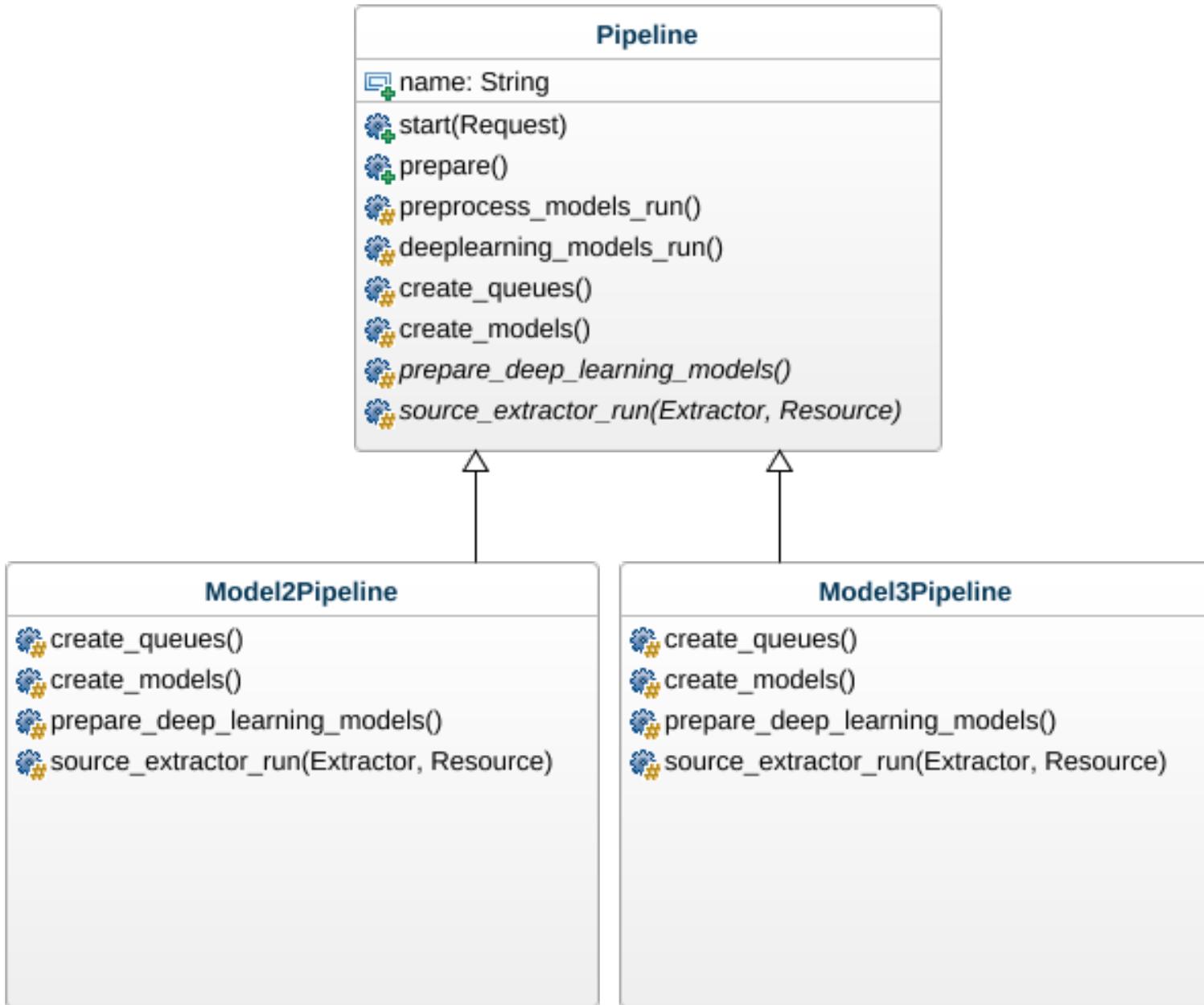
➤ Project parts

1. RequestServer
2. Pipeline
3. Models:
 - DeepLearning Models
 - Preprocess Models
4. Data Resources:
 - Resource (Local/S3 – Image/Video)
 - Extractor (ImageFolder/S3Video/LocalVideo)
5. Manager:
 - PipelineManager
 - ResponseManager

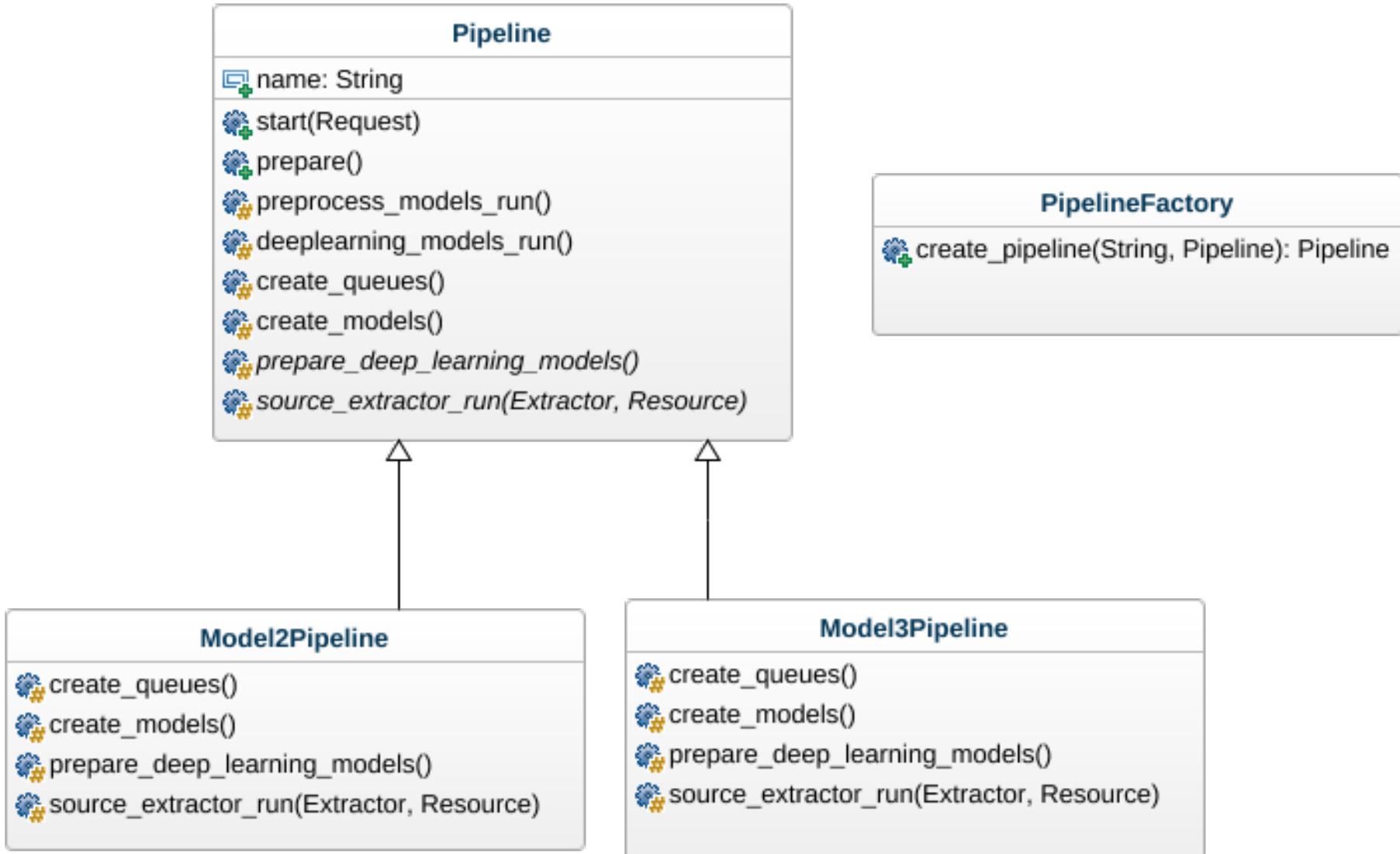


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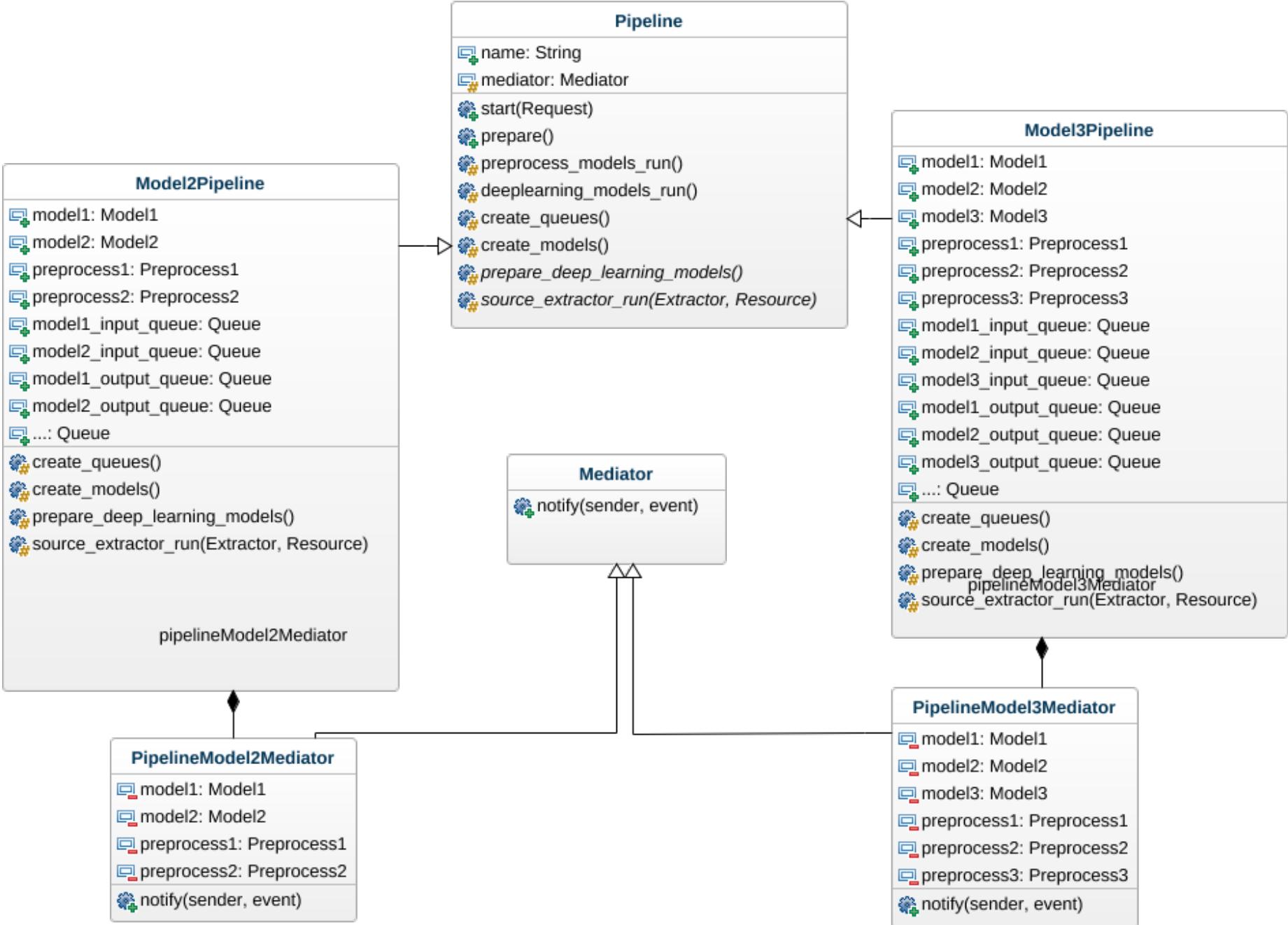
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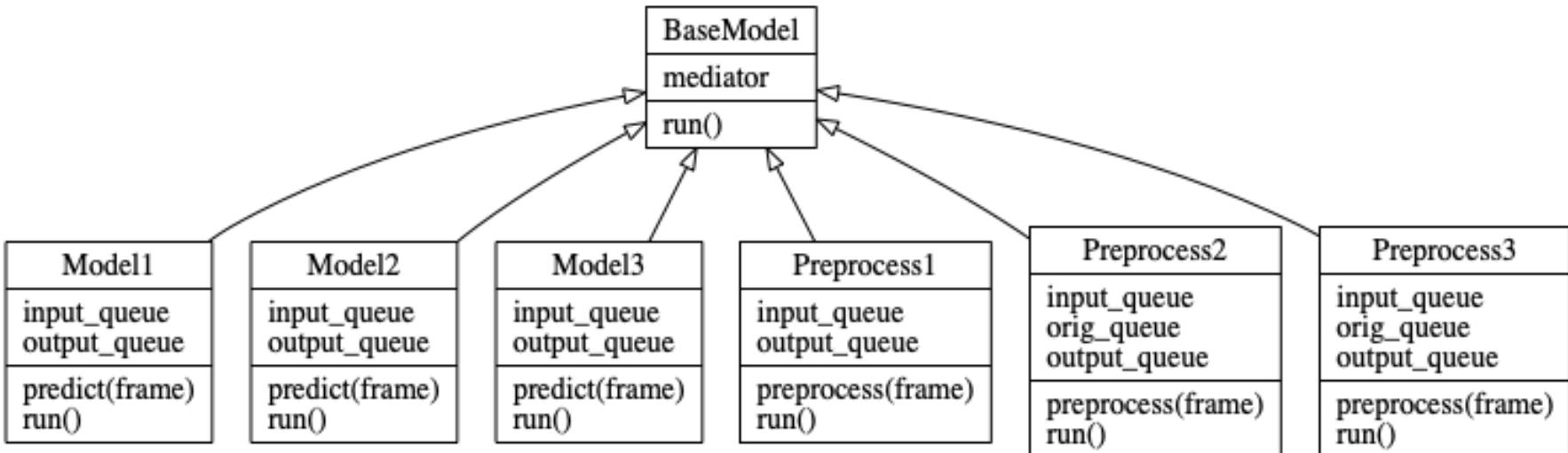


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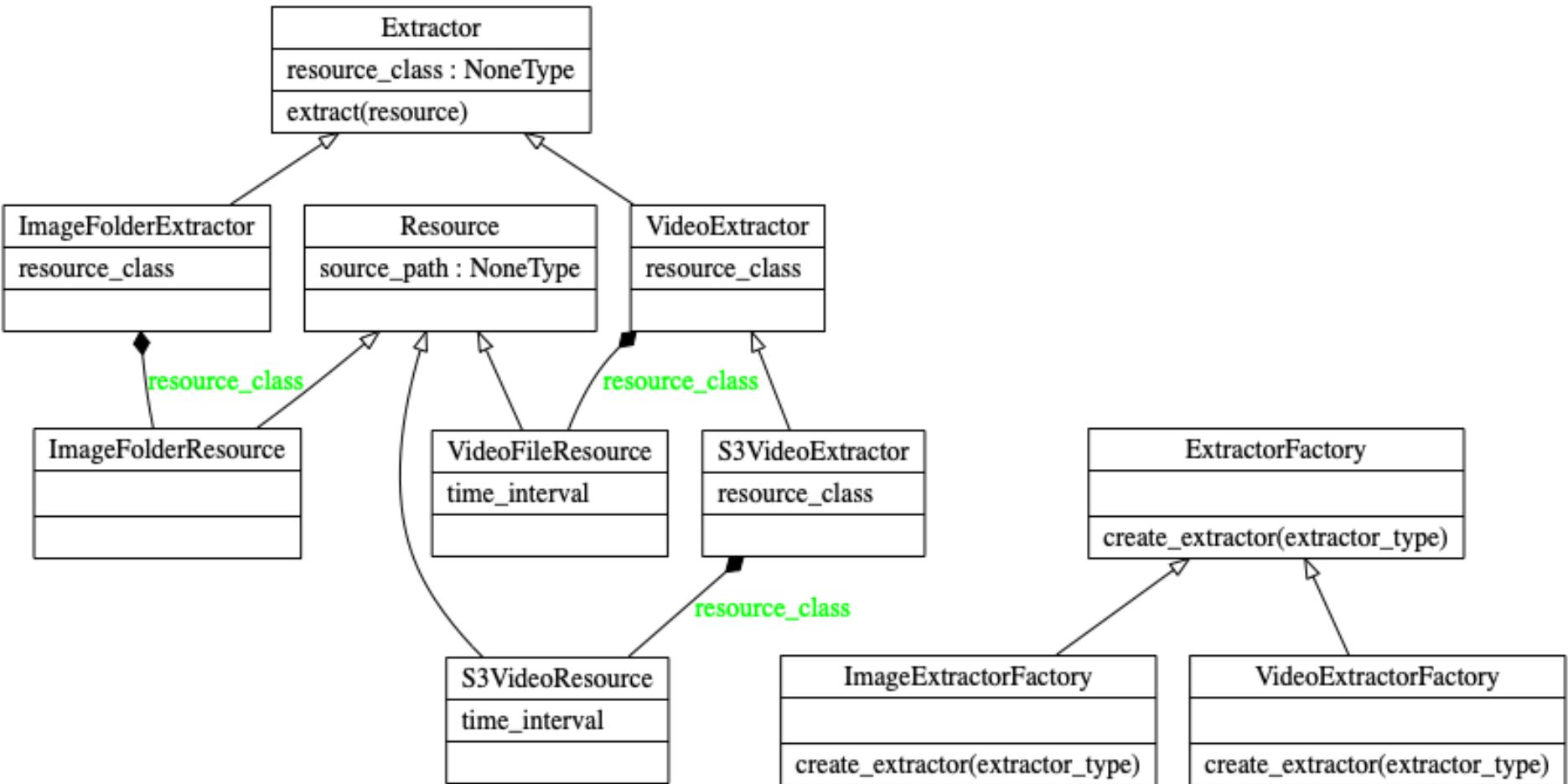
M O D E L S

M O D U L E



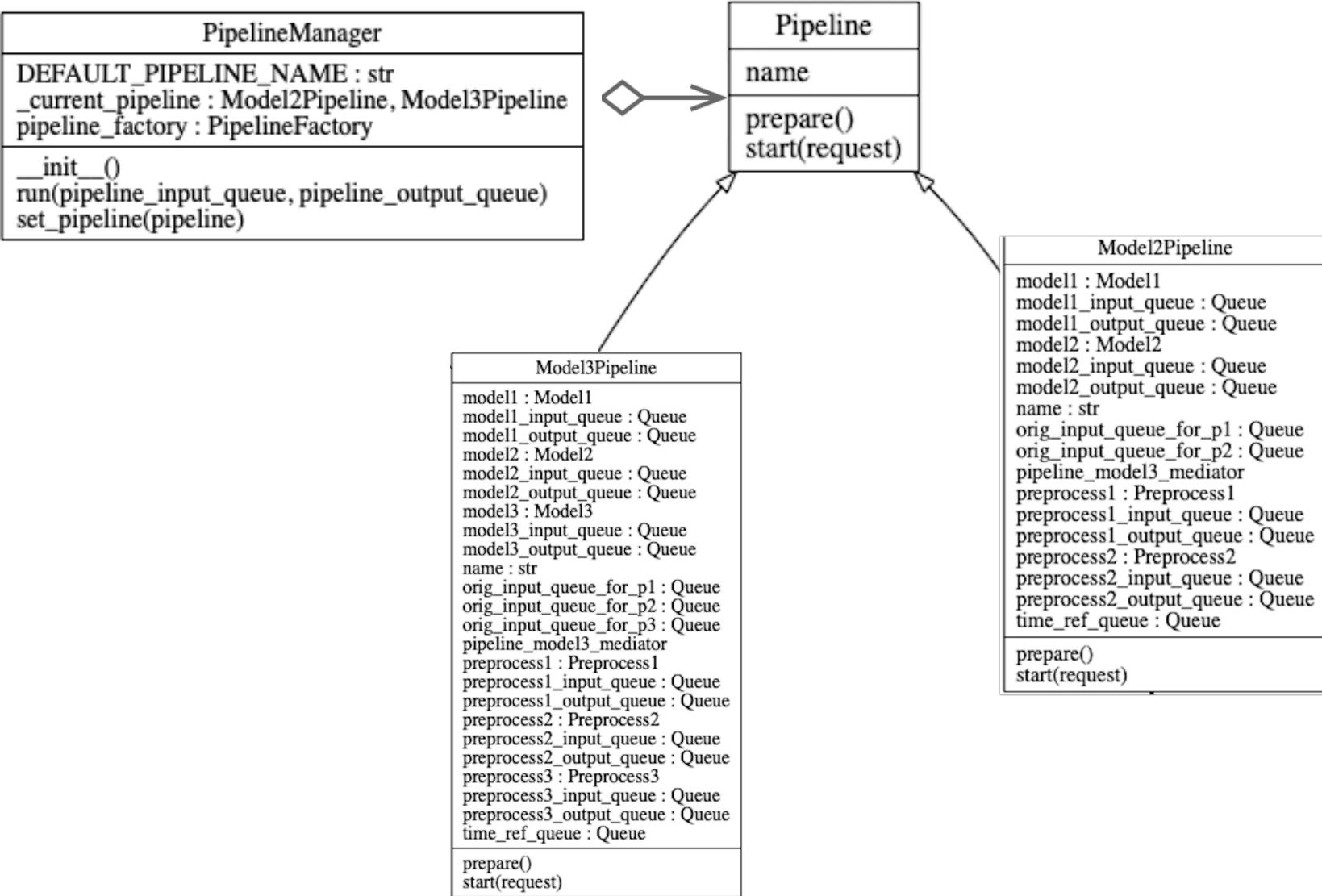
FACTORY PATTERN

DATA RESOURCE

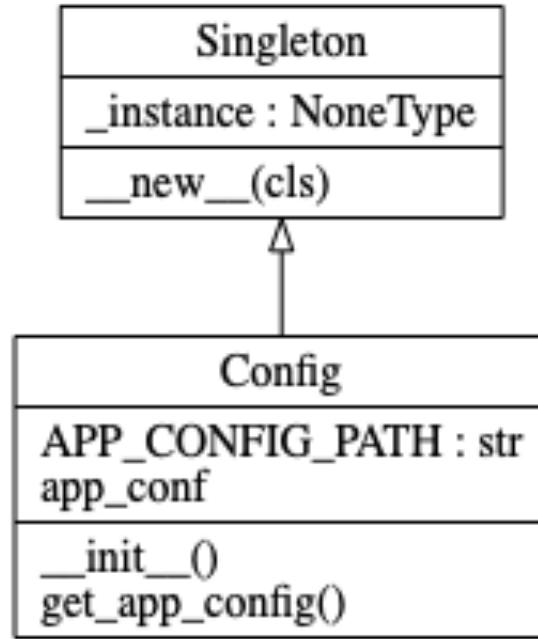


STRATEGY PATTERN

MODEL

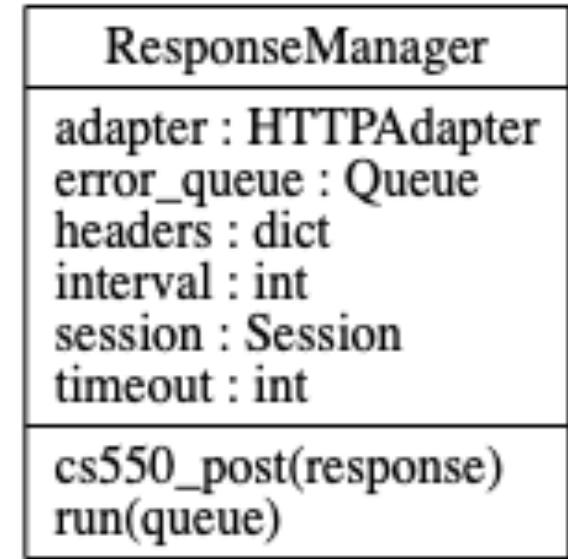
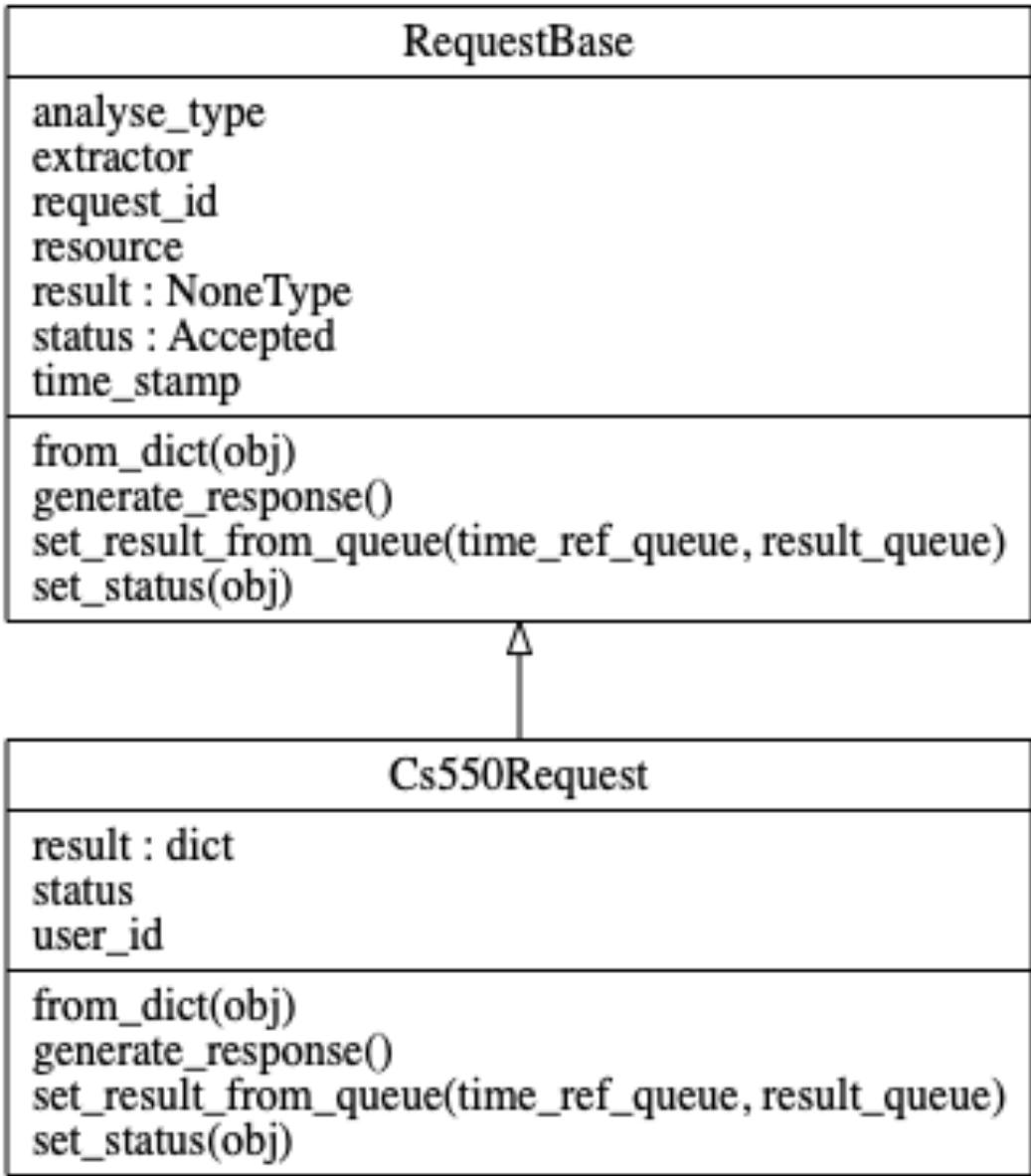


S I N G L E T O N | C O N F I G



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PROJECT REALIZATION

1. Version Control: Github
2. Code Push Strategy: Pull Request on Master
3. Project tasks: Github Project
4. Client – Service handshake: API Design Doc

➤ Pull Request & review

Merged ykgrr merged 4 commits into master from RequestClassImplementation 5 days ago

Conversation 5 Commits 4 Checks 0 Files changed 7 +317 -0

ykgrr commented 8 days ago
Request class handle that mapping to incoming request appropriate class format

ykgrr added 4 commits 8 days ago

- basic web server implementation b0dea22
- base abstract class added for request ... c9ea630
- example request class is added for Cs550 Class 75175d1
- WebServer is edited for cs550 request class 25d43c3

ykgrr self-assigned this 8 days ago

ykgrr requested a review from esumengen 8 days ago

esumengen reviewed 5 days ago

[View changes](#)

requests/cs550_request.py

```
39 +     def generate_responses(self):
40 +         response = {
41 +             "requestId": self.request_id,
42 + }
```

esumengen 5 days ago
Respons'u bu class oluşturması sağlıklı olur mu?

1

ykgrr 5 days ago Author
Aynı bilgiler bu class'ta mevcut olduğu için response için gerekli result'ı burada oluşturup response server'a göndeririz

Reply...

Resolve conversation

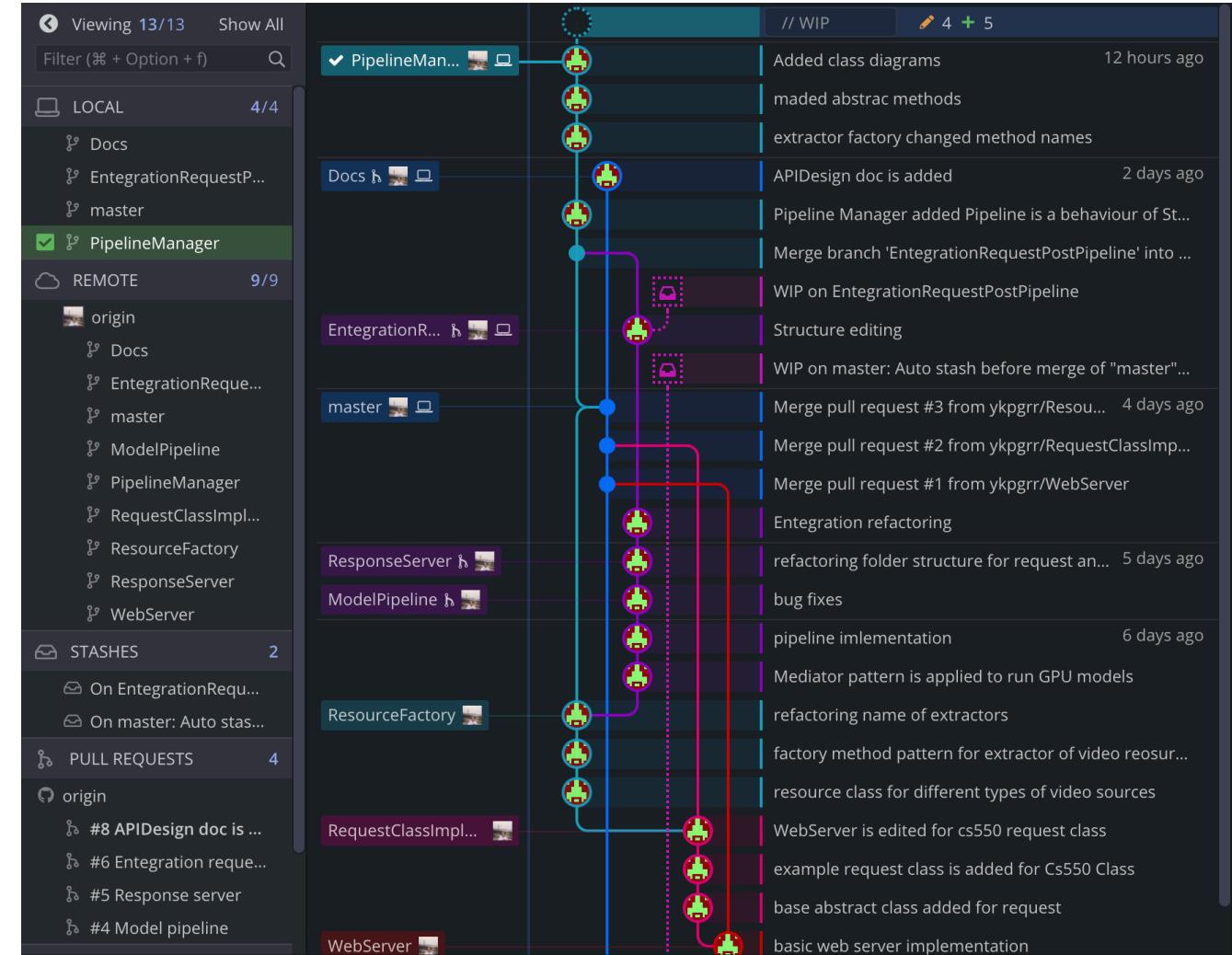
requests/cs550_request.py

```
20 +     return Cs550Request(
21 +         request_id=request_id,
22 +         userId=user_id,
23 +         #resource=create_resource(path=path)
```

esumengen 5 days ago
Buraya göre bende bir json parser oluşturuyorum

1

➤ Version Control: Branches and commits



➤ TASK Management

🔒 ykgrr / Deep-Learning-Pipeline-for-Deployment > Projects > 🔒 CS534 Design Pattern Term Project  Filter cards + Add cards(1 new)

To do 2 + ...

- ExampleClient Branchi üzerinden yeni branchler oluşturularak GUI için geliştirme yapılacak. PR'lar ExampleClient a açılacak
Added by ykgrr
- ExampleClient Branch'i oluşturulacak
Added by ykgrr

In progress 5 + ...

- Deadline for deployment: 11 Aralık Çarşamba
Daha sonra PowerPoint hazırlız.
Deadline for project submission: 18 Aralık Çarşamba
Added by ykgrr
- API DESIGN** #7 opened by ykgrr
documentation 
- API Design Hakkında Uzlaşma
Added by ykgrr
- Entegration
Added by ykgrr
- PowerPoint
Added by ykgrr

WAITING PR 3 + ...

- Model pipeline** #4 opened by ykgrr
- Entegration request post pipeline** #6 opened by ykgrr
- Response server** #5 opened by ykgrr

Done 7 + ...

- API DESIGN Document
Added by ykgrr
- Mediator Research
Added by ykgrr
- Threading Research
Added by ykgrr
- Request Class and CS550 request
Added by ykgrr
- Pipeline and PipelineManager
Added by ykgrr
- WebServer
Added by ykgrr
- Response Server
Added by ykgrr

➤ Communication and Handshaking using Github Issue

Code Issues 1 Pull requests 4 Actions Projects 1 Wiki Security Insights Settings

API DESIGN #7

Open ykgrr opened this issue 3 days ago · 2 comments

ykgrr commented 3 days ago · edited

API Design

Incoming Request for deeplearning pipeline

Requests for deep learning pipeline will be sent by Client (GUI / basic web application).

An ID (`request_id`) will be formed for each request and sent with request

Requests will be POST requests and parameters are defined below
Answers to the POST request will mention status of the request.

When the DL analysis is complete analysis results will be sent by the DL server to client.

Cs550 Request

Incoming POST request for DL pipeline:

```
{  
    "requestId": 1000,  
    "userId": "yakup",  
    "ts": 1100, //current time stamp  
    "interval": { //in seconds  
        "start": 0.00,  
        "end": 1.0  
    },  
    "source": "Video/Local", //Source type. Video-Image/S3-Local-Folder  
    "path": "/tests/test_data/videos/test_video_single.mp4", //s3_video_link or Local  
    "analyse_type": "two_model" // "two_model" or "three_model"  
}
```

response of this POST request:

Assignees ykgrr, esumengen

Labels documentation

Projects CS534 Design Pattern Term ... In progress

Milestone No milestone

Notifications Customize Unsubscribe
You're receiving notifications because you're watching this repository.

2 participants

Lock conversation

Pin issue Transfer issue

THANK YOU

Yakup Görür

Emre Sümegen

