Deep Learning School

DLS FINAL PROJECT

OBJECT DETECTION

WORK SCENARIO

SCENARIO 1:

- THE EMPHASIS IS ON DEVELOPING A DEMO INTO WHICH A NEURAL NETWORK MODEL FOR DETECTION IS EMBEDDED
- MAIN INTERFACE IS A WEB APPLICATION
- INPUT IMAGES COME IN THE FORM OF CUSTOM FILES
- THE DEMO SHOULD SHOW THAT THE DETECTOR IS SUCCESSFULLY WORKING ON THE SUBMITTED IMAGES AND FINDS THE DESIRED OBJECTS

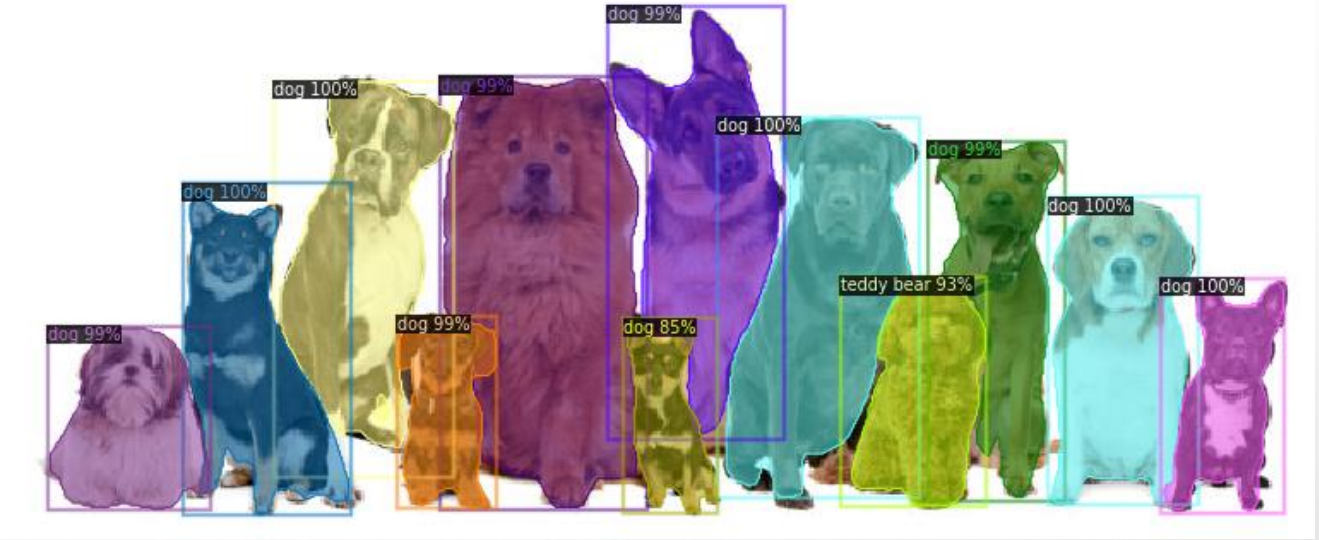
CHOOSING A FRAMEWORK FOR DETECTION

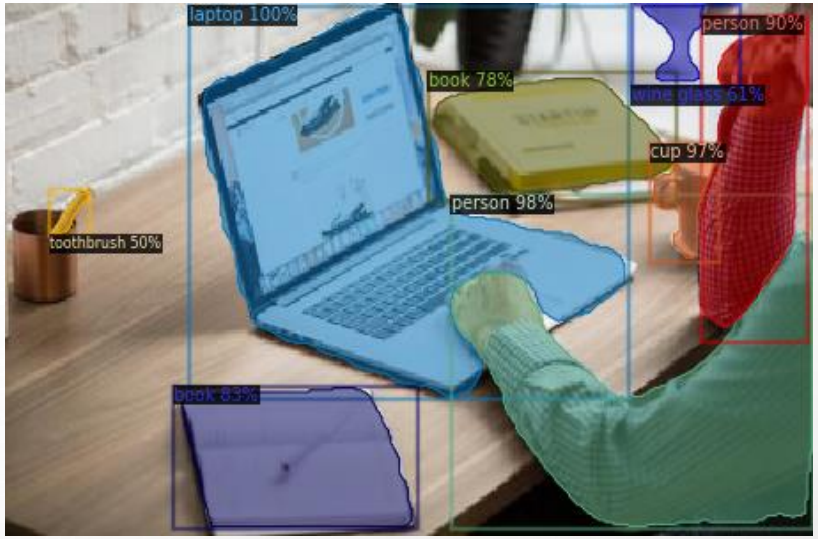
DETECTRON2 IS AN OBJECT RECOGNITION FRAMEWORK RELEASED BY FACEBOOK IN 2019.

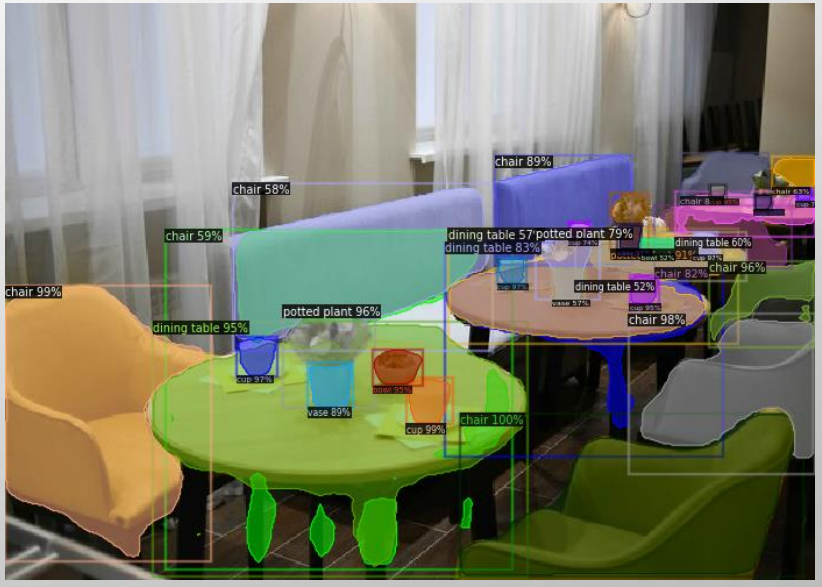
DETECTRON2 FEATURES

- PYTORCH
- MODULARITY AND EXTENSIBILITY
- VARIETY OF MODELS

RUNNING A DETECTOR ON RANDOM IMAGES


dog 99%
dog 100%
dog 99%
dog 100%
dog 100%
dog 99%
dog 100%
dog 99%
dog 99%
dog 85%
teddy bear 93%
dog 100%


laptop 100%
person 90%
book 78%
wine glass 61%
cup 97%
person 98%
toothbrush 50%
book 83%

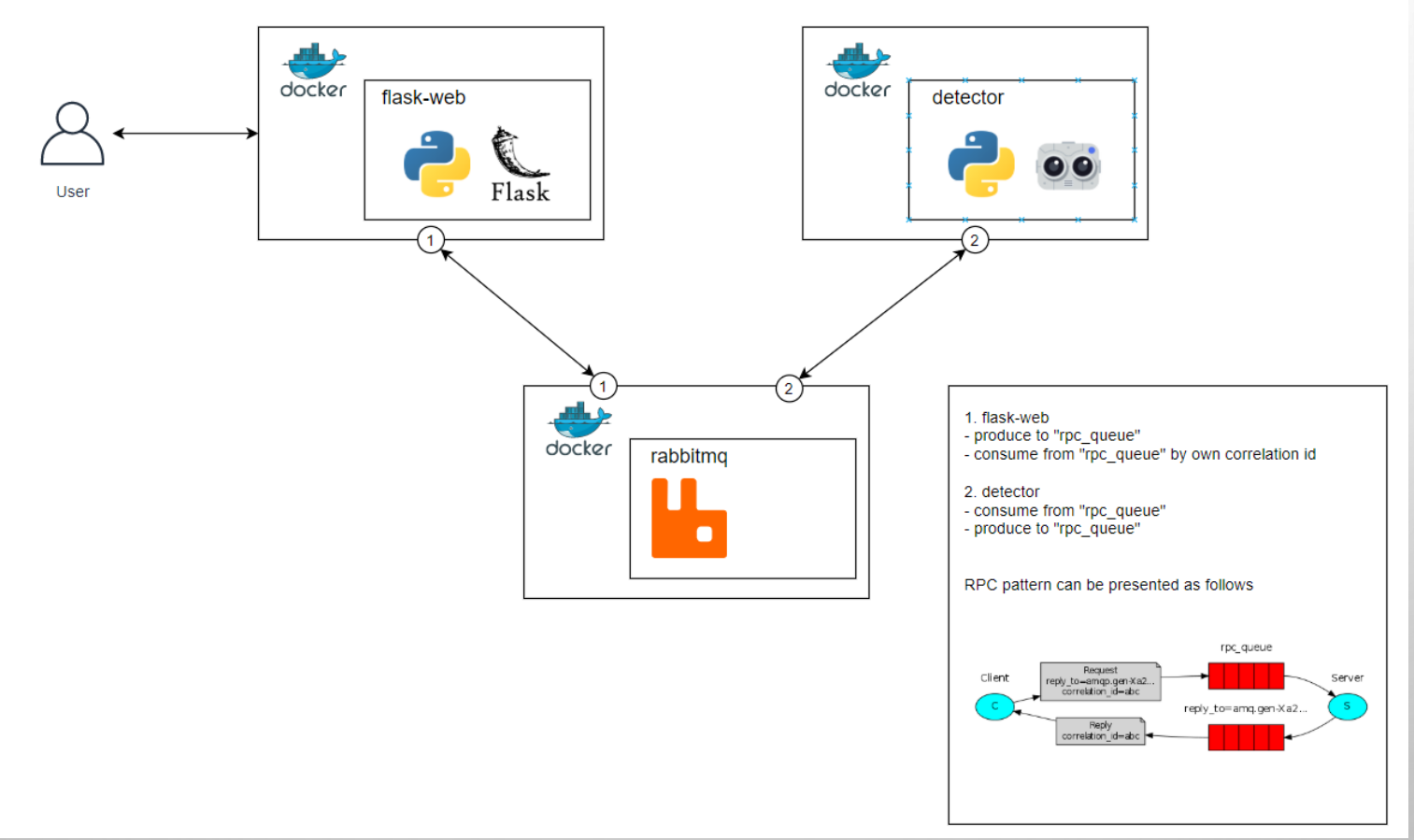

chair 89%
chair 58%
chair 59%
dining table 57%
potted plant 79%
dining table 83%
dining table 60%
chair 82%
chair 96%
chair 99%
dining table 52%
potted plant 96%
chair 98%
dining table 95%
vase 89%
cup 99%
chair 100%

CHOOSING A FRAMEWORK FOR A WEB DEMO

FLASK IS A FRAMEWORK FOR BUILDING WEB APPLICATIONS IN THE PYTHON PROGRAMMING LANGUAGE USING THE WERKZEUG TOOLKIT AND THE JINJA2 TEMPLATING ENGINE.

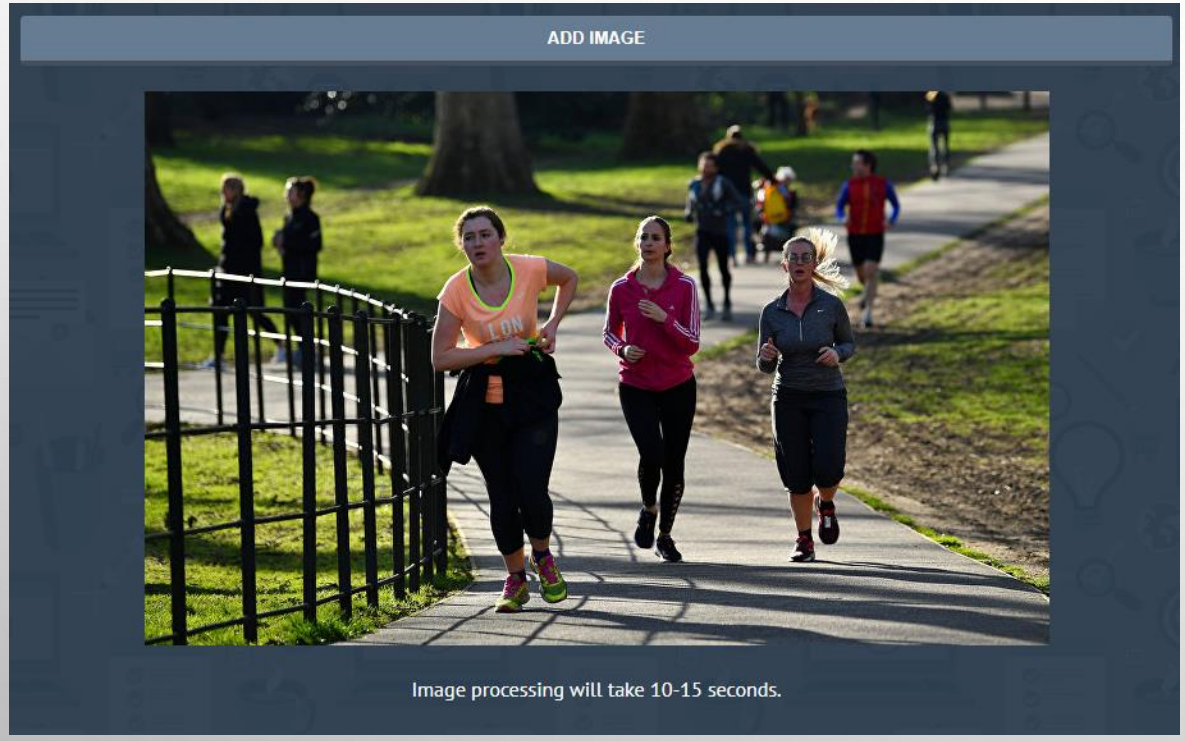
FLASK BELONGS TO THE CATEGORY OF SO-CALLED MICRO-FRAMEWORKS - MINIMALISTIC WEB APPLICATION FRAMEWORKS THAT DELIBERATELY PROVIDE ONLY THE MOST BASIC FEATURES.

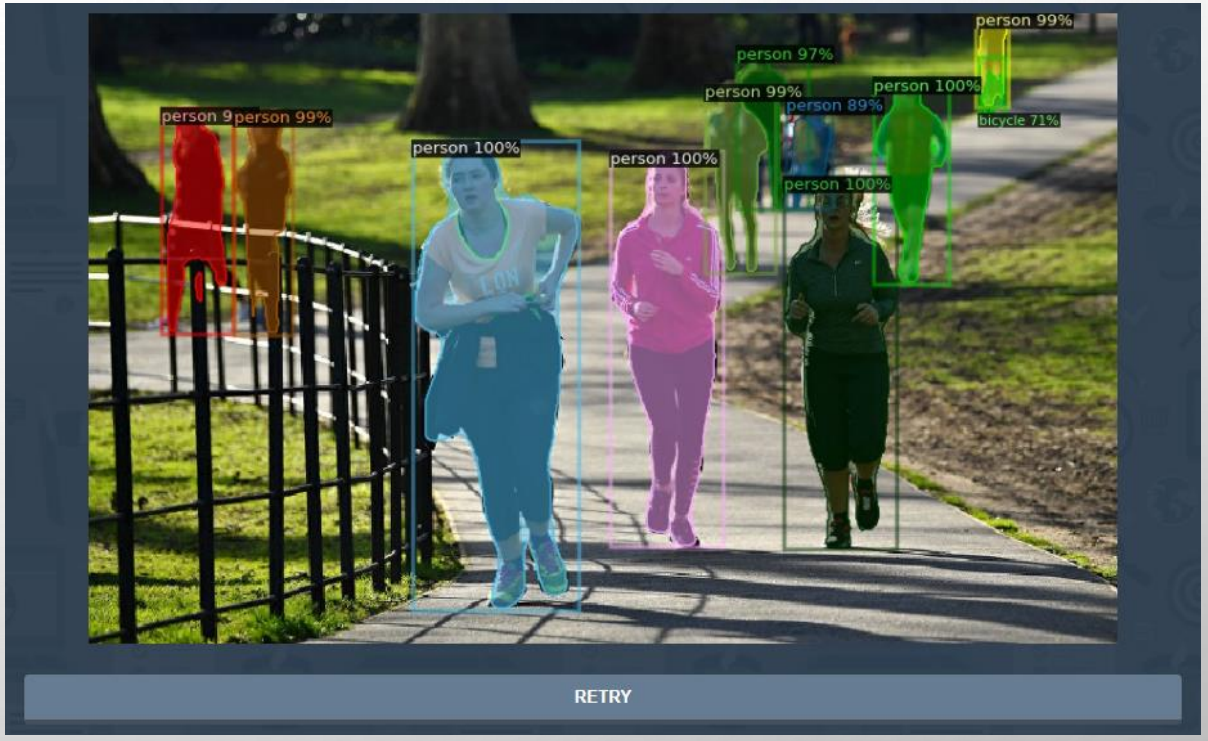
GENERAL ARCHITECTURE



DEMO

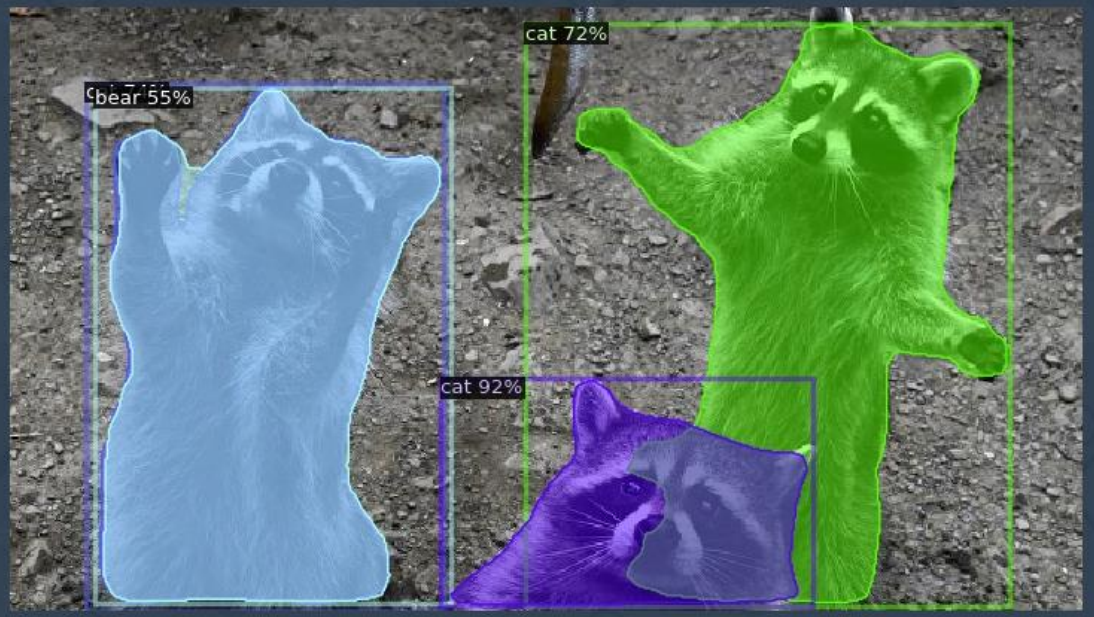
DEMO TESTING





ADD IMAGE

Image processing will take 10-15 seconds.



RETRY

ADD IMAGE

Image processing will take 10-15 seconds.

RETRY

NOTES

- OBJECTS THAT WERE NOT IN THE TRAINING SAMPLE (COCO DATASET) ARE NOT DETECTED OR INCORRECTLY DETECTED.
- FUZZY OBJECTS OR OBJECTS WITH AN UNUSUAL LOCATION ARE ASSIGNED A LOWER CONFIDENCE PERCENTAGE.
- MEDIUM-SIZED IMAGES ARE PREFERRED TO SPEED UP THE PROCESSING AND FALL INTO THE NON-CONFIGURABLE SERVER WAIT TIMEOUT (30 SECONDS).

TO IMPROVE THE QUALITY OF DETECTION, YOU CAN TRY TO RETRAIN THE NETWORK USING ADDITIONAL DATA.