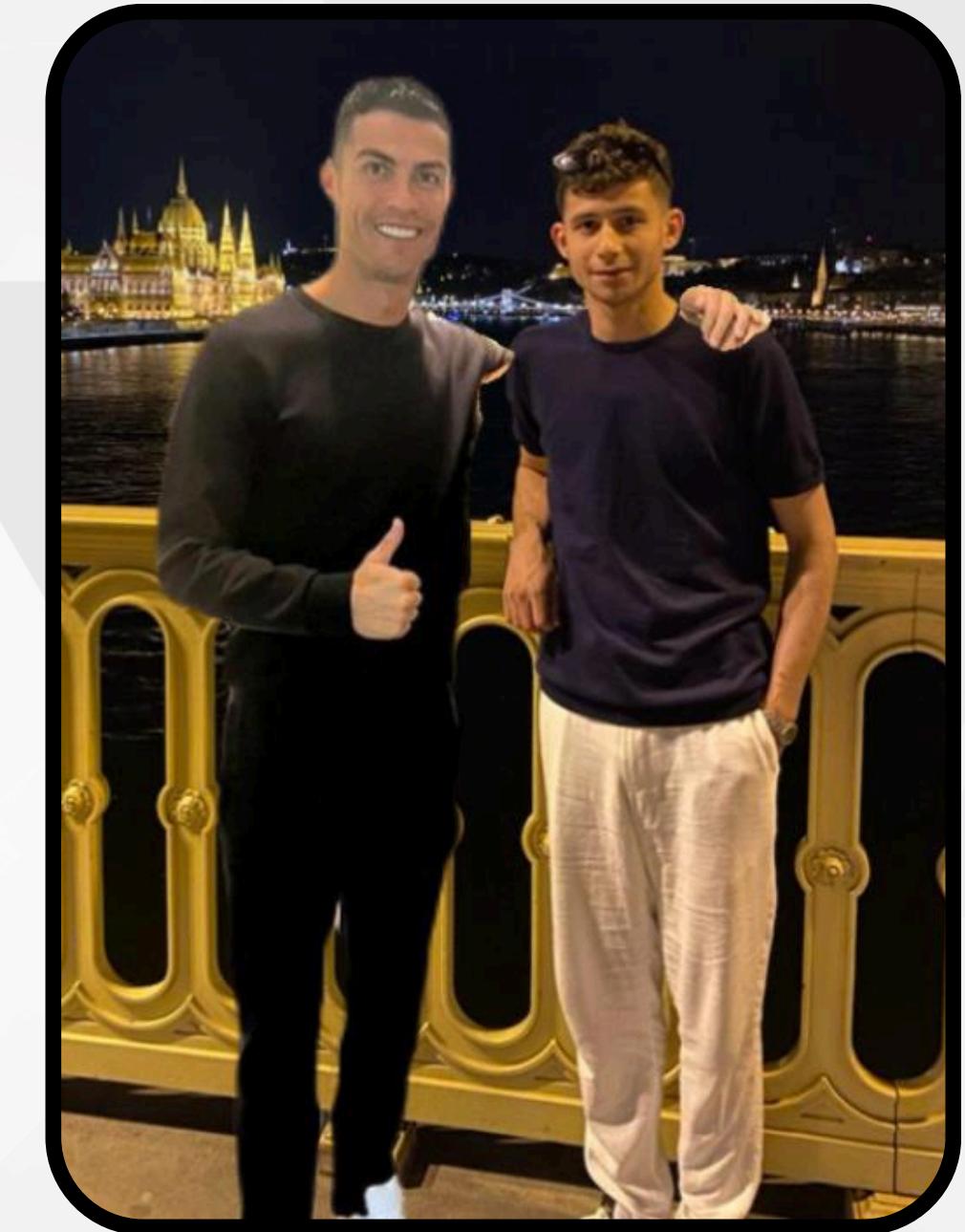


DO YOU LOOK LIKE RONALDO ?

MACHINE LEARNING ANSWERS !

ISTANBUL AYDIN UNIVERSITY

Machine Learning
Spring Semester



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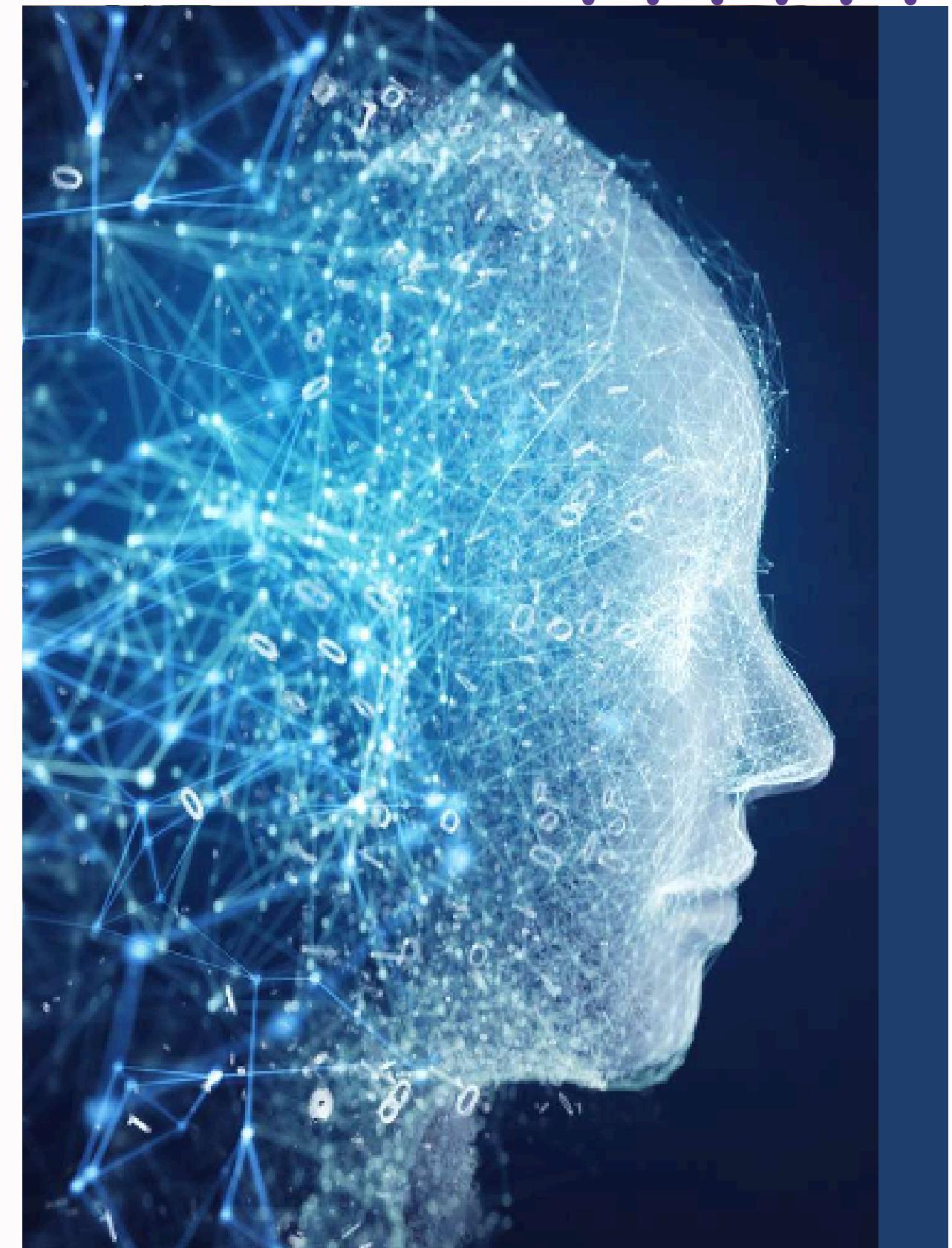
AI Bias

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Future Goals



ML TYPE USED

Supervised machine learning

CLASSIFICATION:

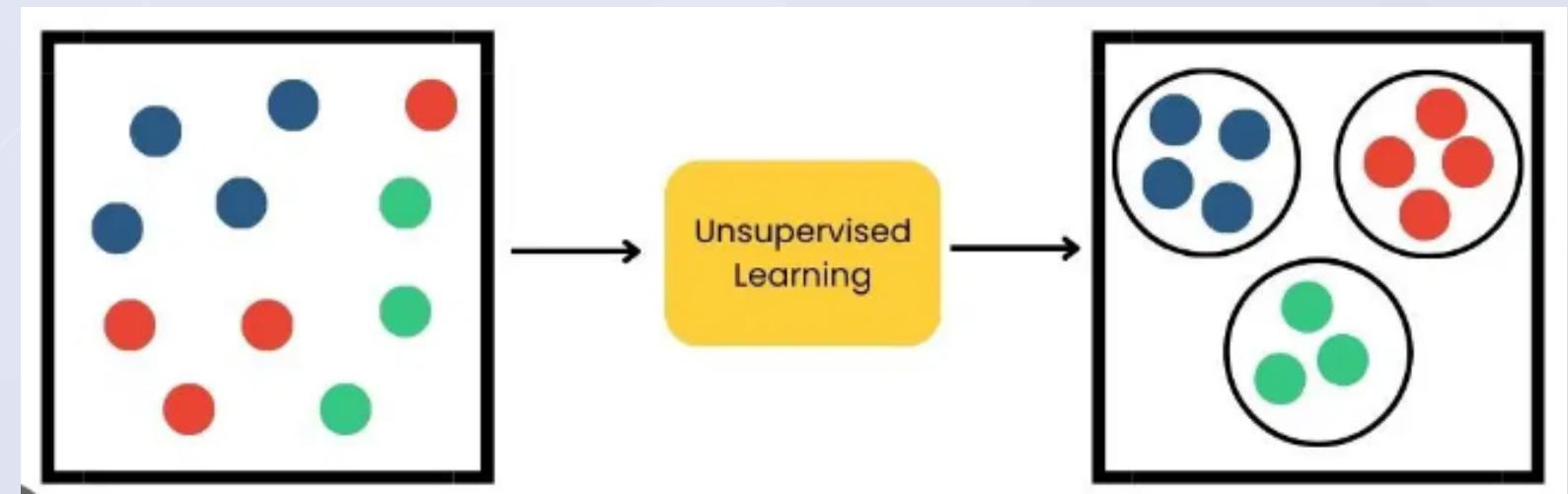
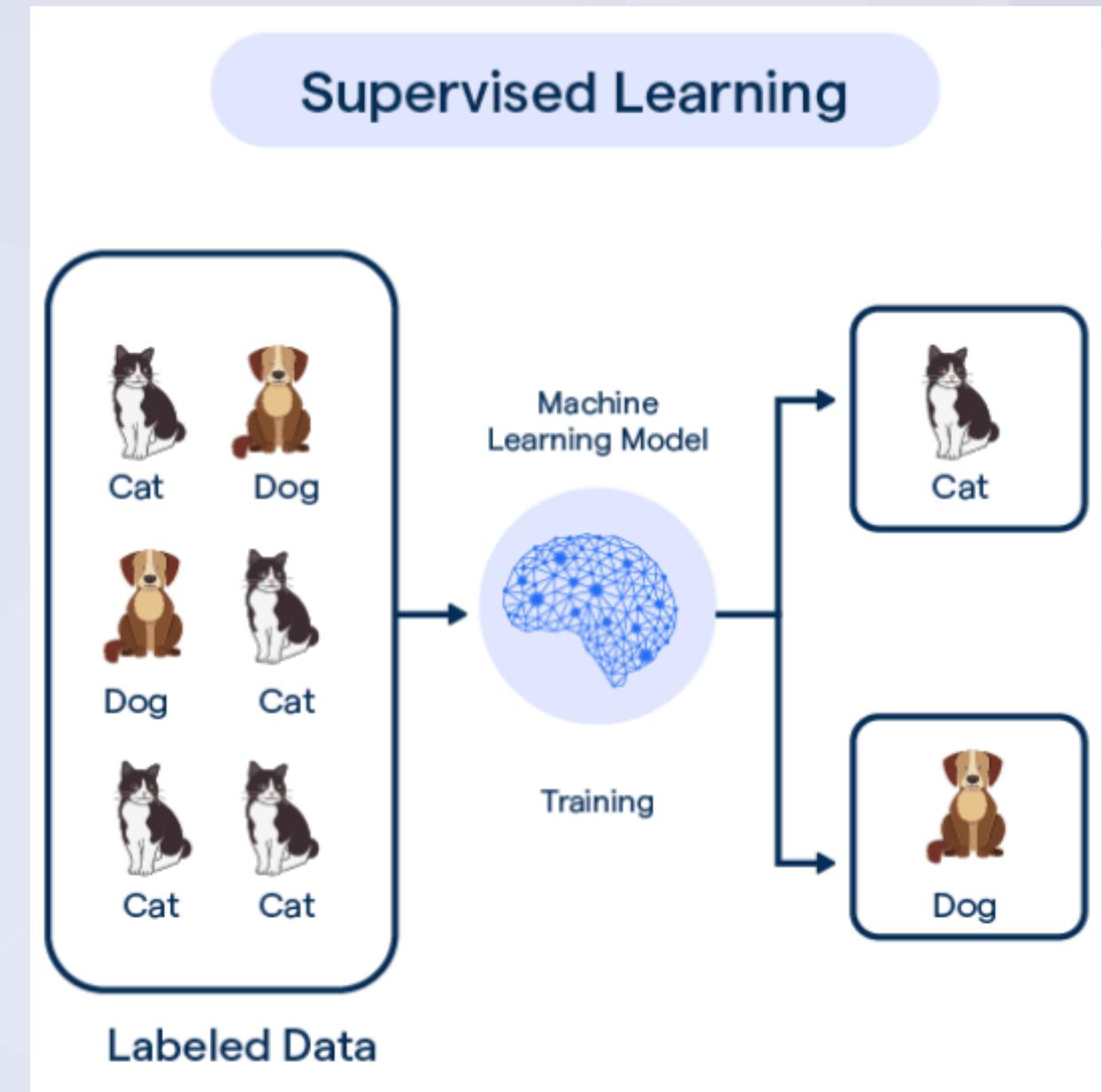
4 classes (0/1/2/3) :

(Messi / Mbappe / Neymar / Ronaldo)

SVM (Support Vector Machine)

What is Intelligence?

Are the machines really intelligent?
Or the human who trained it is the intelligent?.....



WHAT IS INTELLIGENCE?

What is Intelligence?

The ability to choose the best action to achieve a specific goal based on:

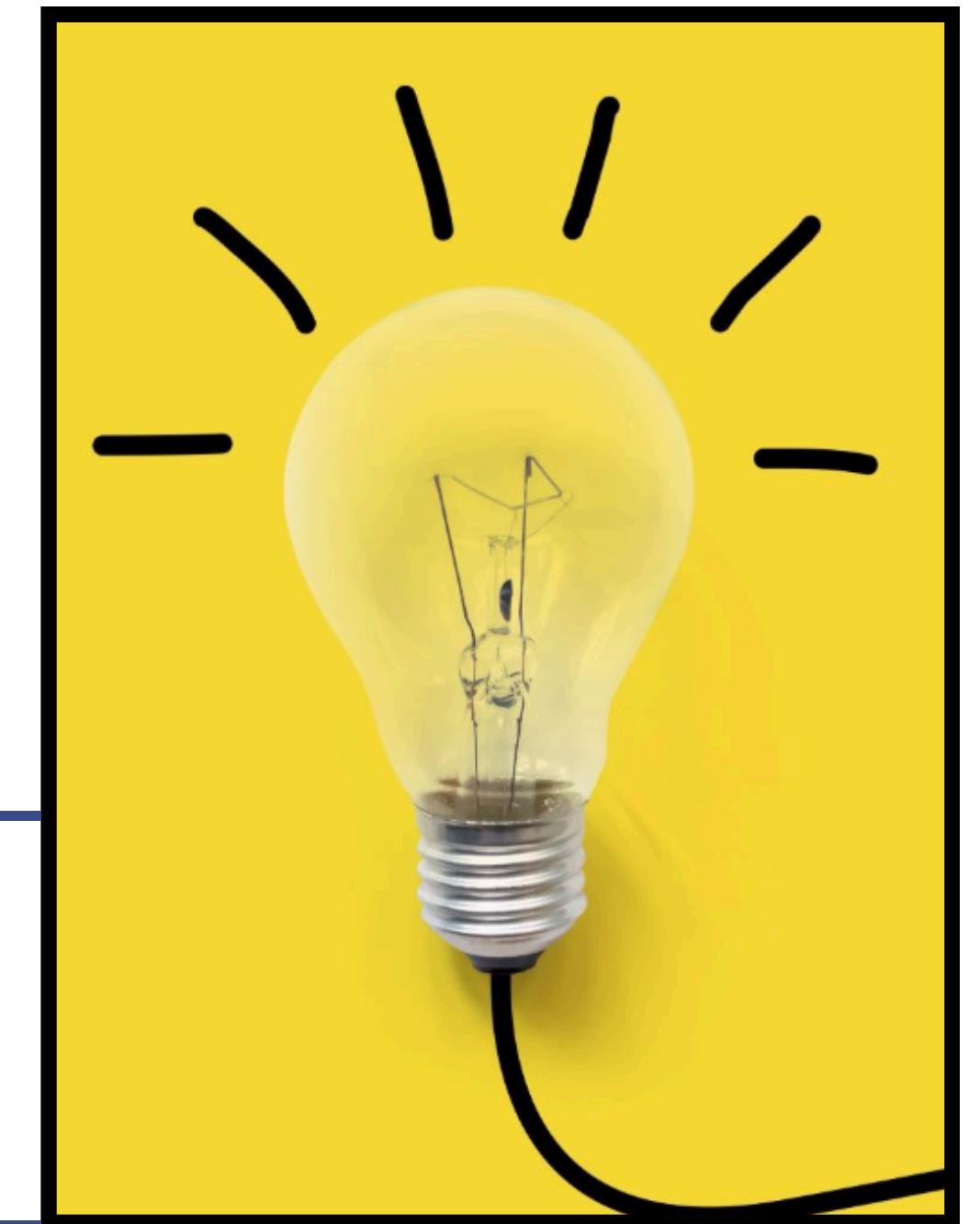
- Specific criteria to optimize
- The available resources

Examples?

abstraction capacity, logic, understanding, self-awareness, learning, emotional knowledge, reasoning, planning, creativity, critical thinking, ability to identify and solve problems.

Another point of view

Recognizing problems is a characteristic of intelligence and, if you think about it, a machine does not find new problems, but only solves the ones that are presented to it. Even more, if a machine learning algorithm is presented with problems other than those it was trained for, it fails miserably.



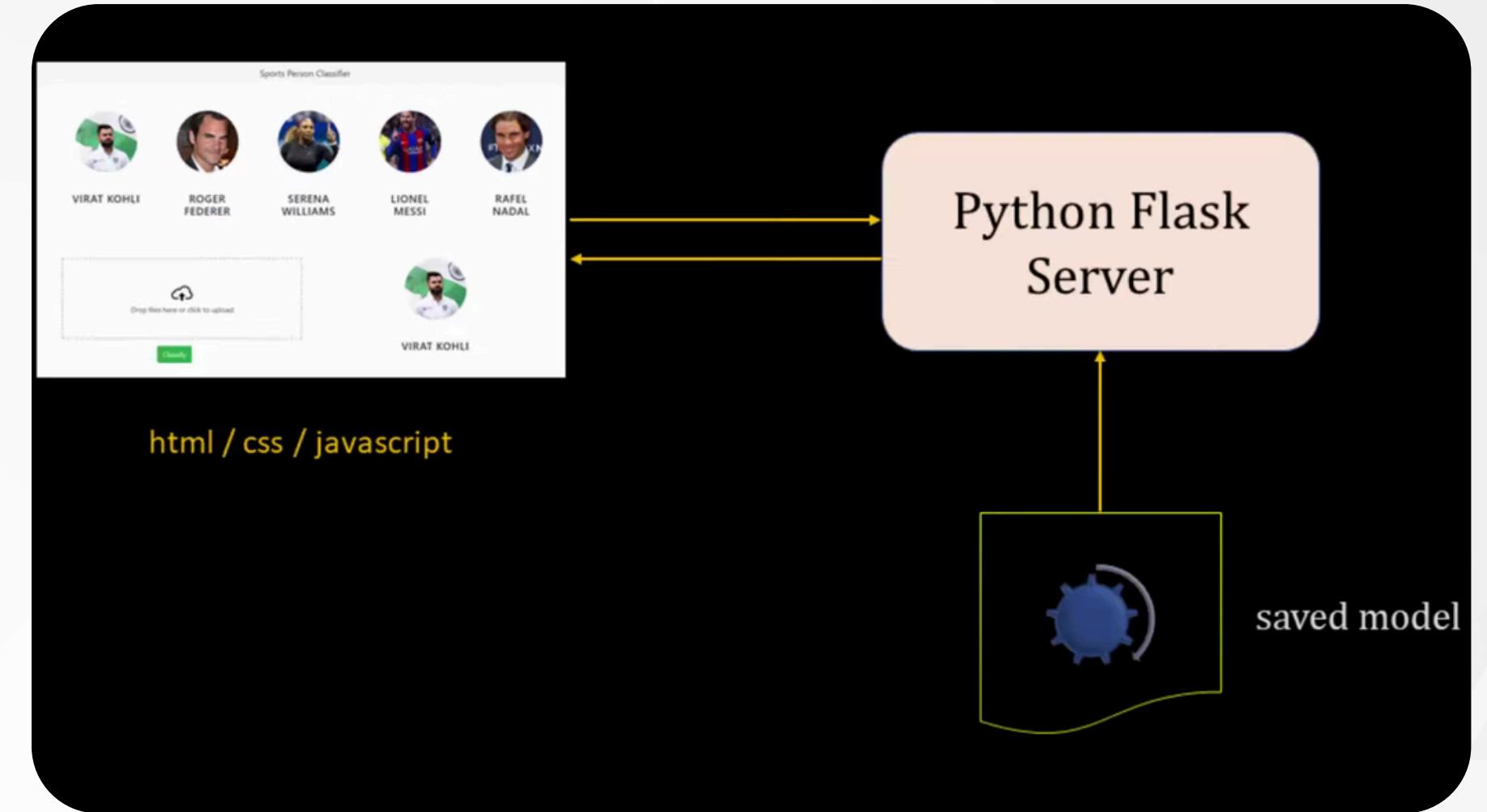
PROJECT DETAILS

3 MAIN STEPS:

- **Model:** JUPYTER Notebook used for training the model then saved.

- **Python Flask Server:** Used Pycharm to have a flask server connected with the model.

- **WEB:** Used to show the last result of the project.



ML TYPES RATE

SVM
77%

RANDOM FOREST
57%

LOGISTIC REGRESSION
71%

	model	best_score	best_params
0	svm	0.733333	{'svc_C': 1, 'svc_kernel': 'linear'} SVM
1	random_forest	0.504762	{'randomforestclassifier_n_estimators': 10}
2	logistic_regression	0.714286	{'logisticregression_C': 1}


```
best_estimators
```



```
{'svm': Pipeline(steps=[('standardscaler', StandardScaler()), ('svc', SVC(C=1, gamma='auto', kernel='linear', probability=True)), ('random_forest': Pipeline(steps=[('standardscaler', StandardScaler()), ('randomforestclassifier', RandomForestClassifier(n_estimators=10))]), 'logistic_regression': Pipeline(steps=[('standardscaler', StandardScaler()), ('logisticregression', LogisticRegression(C=1, solver='liblinear'))])})
```



```
best_estimators['svm'].score(X_test,y_test)
```



```
0.7714285714285715
```



```
best_estimators['random_forest'].score(X_test,y_test)
```



```
0.5714285714285714
```



```
best_estimators['logistic_regression'].score(X_test,y_test)
```



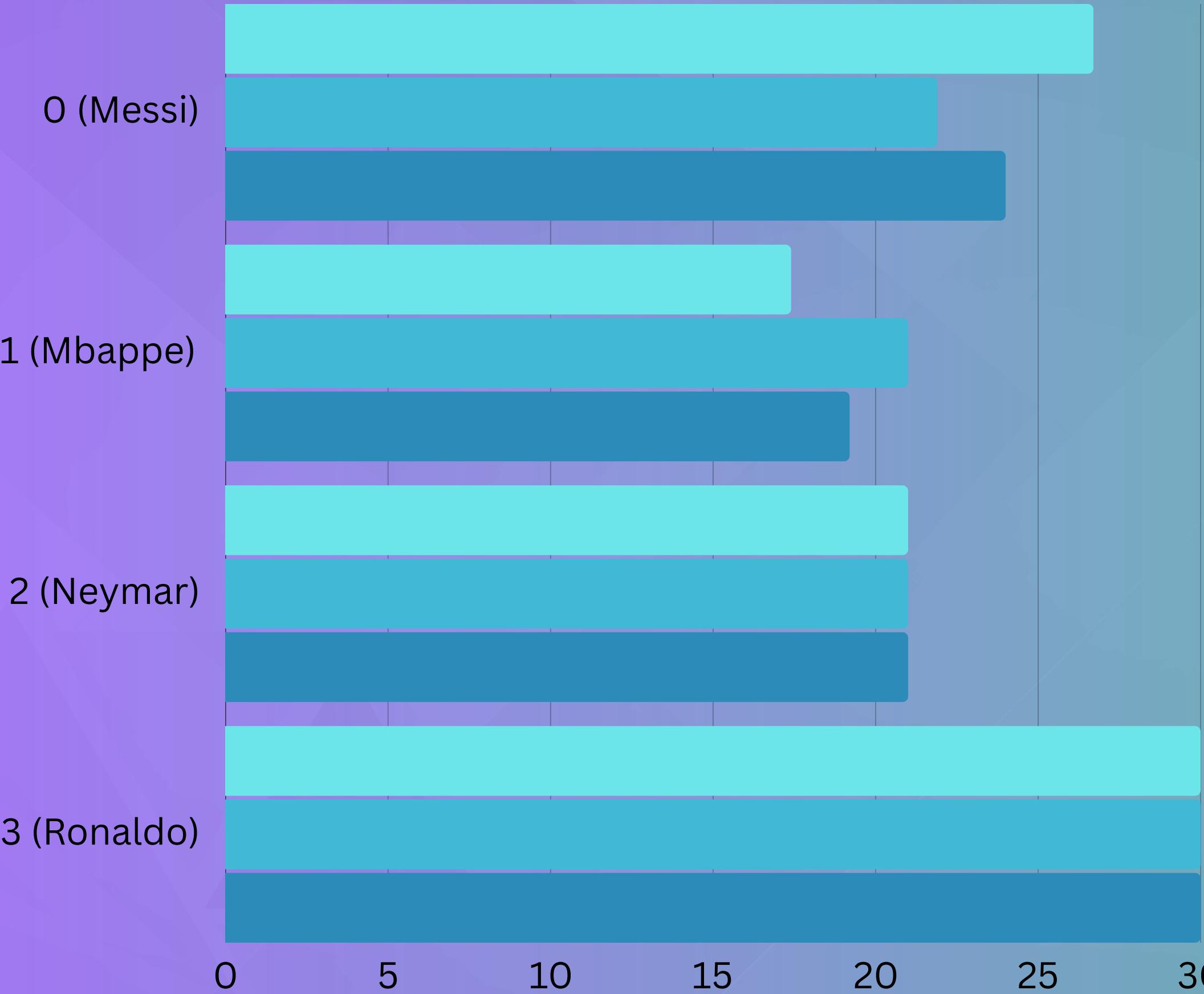
```
0.7714285714285715
```



```
best_clf = best_estimators['svm']
```



AI BIAS



CRISTIANO OR MESSI?

print(classification_report(y_test, pipe.predict(X_test)))				
	precision	recall	f1-score	support
0	0.89	0.73	0.80	11
1	0.58	0.70	0.64	10
2	0.70	0.70	0.70	10
3	1.00	1.00	1.00	4
accuracy			0.74	35
macro avg	0.79	0.78	0.78	35
weighted avg	0.76	0.74	0.75	35

CV ERRORS

1) HIGH LOSS

2) MEDIUM LOSS

3) LOW LOSS

TIDE: A General Toolbox for Identifying Object Detection Errors.
Not easy to get error classification for every single prediction.



<https://medium.com/data-science-at-microsoft/error-analysis-for-object-detection-models-338cb6534051>

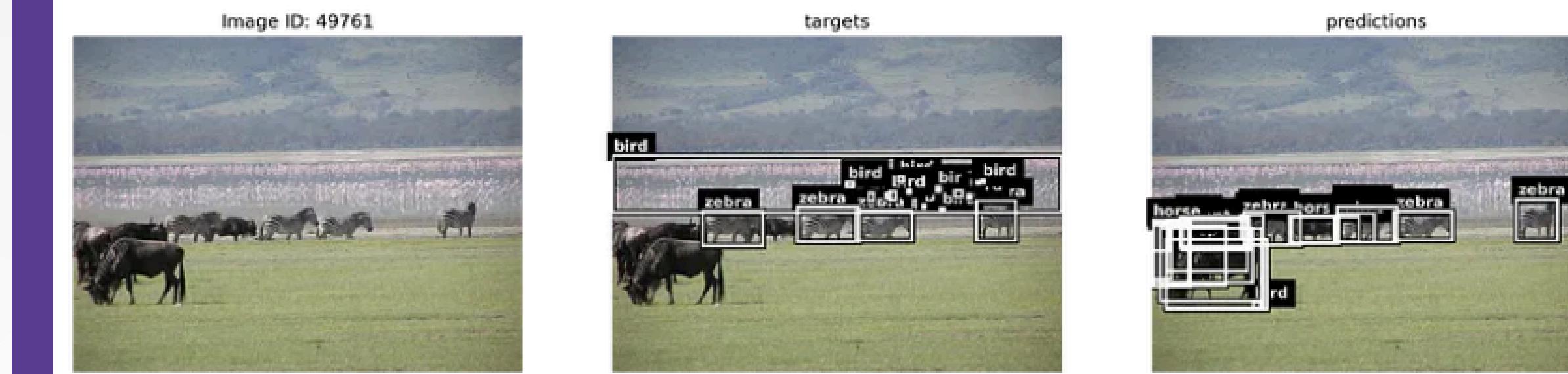


Figure 4: Image with the highest loss. Source: MS COCO dataset (<https://cocodataset.org>).

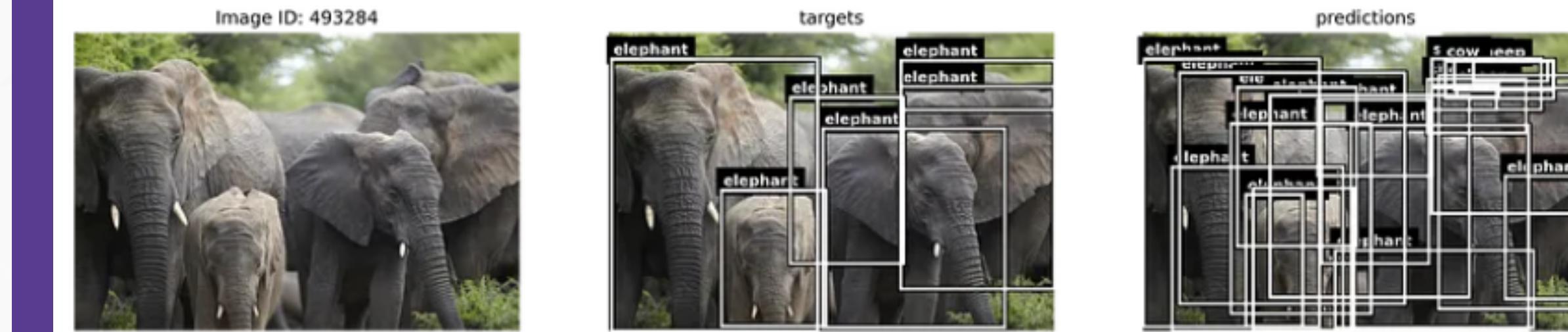


Figure 5: Image with an average loss. Source: MS COCO dataset (<https://cocodataset.org>).

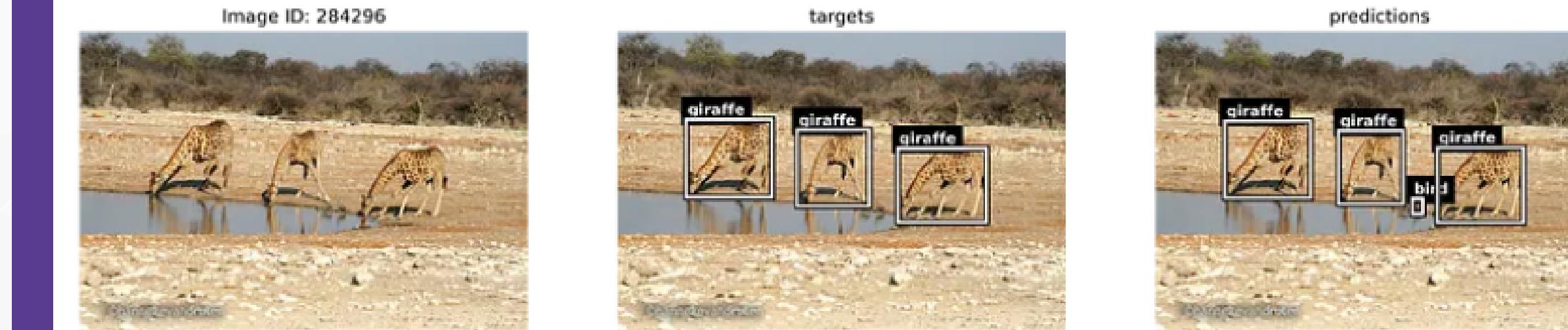


Figure 6: Image with a low loss. Source: MS COCO dataset (<https://cocodataset.org>).

FUTURE AND REAL WORLD USAGE



- **SOCIAL MEDIA**

Recommendation depends on the picture.
(With rights and ethical consideration).

- **HEALTHCARE**

High quality scans of google tried in Thailand...
(<https://www.nature.com/articles/d41586-023-03817-6>)

- **BANKING AND FINANCE**

- **AUTOMOTIVE INDUSTRY**

Personalized settings:
seat size/mirror

- **TRAVEL AND HOSPITALITY**

Travel and Hospitality:
Hotel access: Replacing room keys with facial recognition for hotel guests.

- **AIRPORT SECURITY**

LETS TRY!

localhost:8888/tree/Players_Identifier_ML/CelebrityFaceRecognition/model

jupyter

File View Settings Help

Files Running

Open Download Rename Duplicate Delete New Upload C

/ ... / CelebrityFaceRecognition / model /

Name	Last Modified	File Size
dataset	5 days ago	
opencv	5 days ago	
test_images	5 days ago	
Cristiano.ipynb	5 days ago	2.3 MB
data_cleaning.ipynb	5 days ago	1.1 MB
sports_celebrity_classification.ipynb	5 days ago	1.2 MB
class_dictionary.json	5 days ago	0 B
requirements.txt	5 days ago	41 B
saved_model.pkl	5 days ago	3.3 MB



THANK YOU!

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