



Ugabuga Image Recognition App - Hackaton Ubisoft

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Scop principal

Construirea unei aplicatii ce poate distinge intre imagini din 4 jocuri video utilizand un algoritm de machine learning. Algoritmul este antrenat cu un set de date format din imagini/artwork-uri din jocurile alese. Partea de back-end este realizata in python cu ajutorul bibliotecii TensorFlow. Partea de front-end este realizata in HTML, CSS, JavaScript.



Jocuri alese ca exemplu

Jocuri alese ca exemplu

- Assassin's Creed Origins



Jocuri alese ca exemplu

- Assassin's Creed Origins
- Rainbow Six Siege



Jocuri alese ca exemplu

- Assassin's Creed Origins
- Rainbow Six Siege
- Anno 2205



Jocuri alese ca exemplu

- Assassin's Creed Origins
- Rainbow Six Siege
- Anno 2205
- Grow Home





Jocuri alese ca exemplu

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Putem adauga oricand alte jocuri



Jocuri alese ca exemplu

- Assassins Creed Origins
- Rainbow Six Siege
- Anno 2205
- Grow Home

Putem adauga oricate alte jocuri

(dar cu un cost computational mai mare)



Arhitectura rețelei neurale



Arhitectura rețelei neurale

Tensorflow / Keras



Arhitectura rețelei neurale

Tensorflow / Keras

-> antrenamentul modelului realizat in python

(permite clasificarea pozelor dintr-un folder)

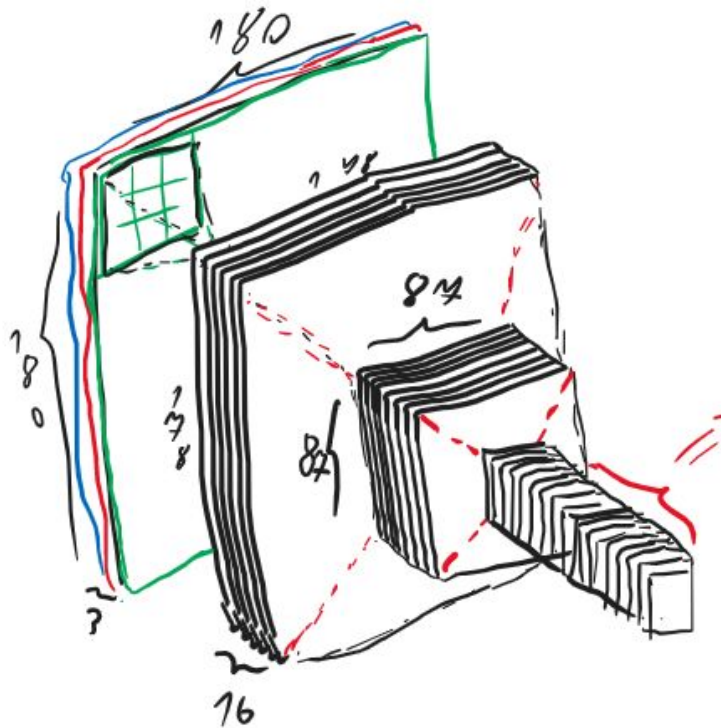


Arhitectura rețelei neurale

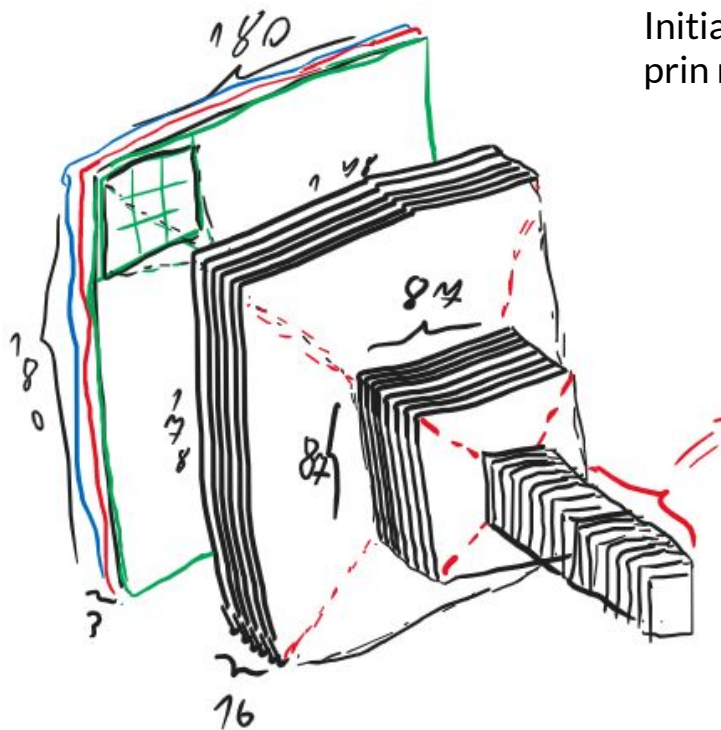
Tensorflow / Keras

- > antrenamentul modelului realizat in python
(permite clasificarea pozelor dintr-un folder)
- > portat în javascript pentru varianta web
(permite obtinerea imaginilor prin link)

Arhitectura rețelei neurale

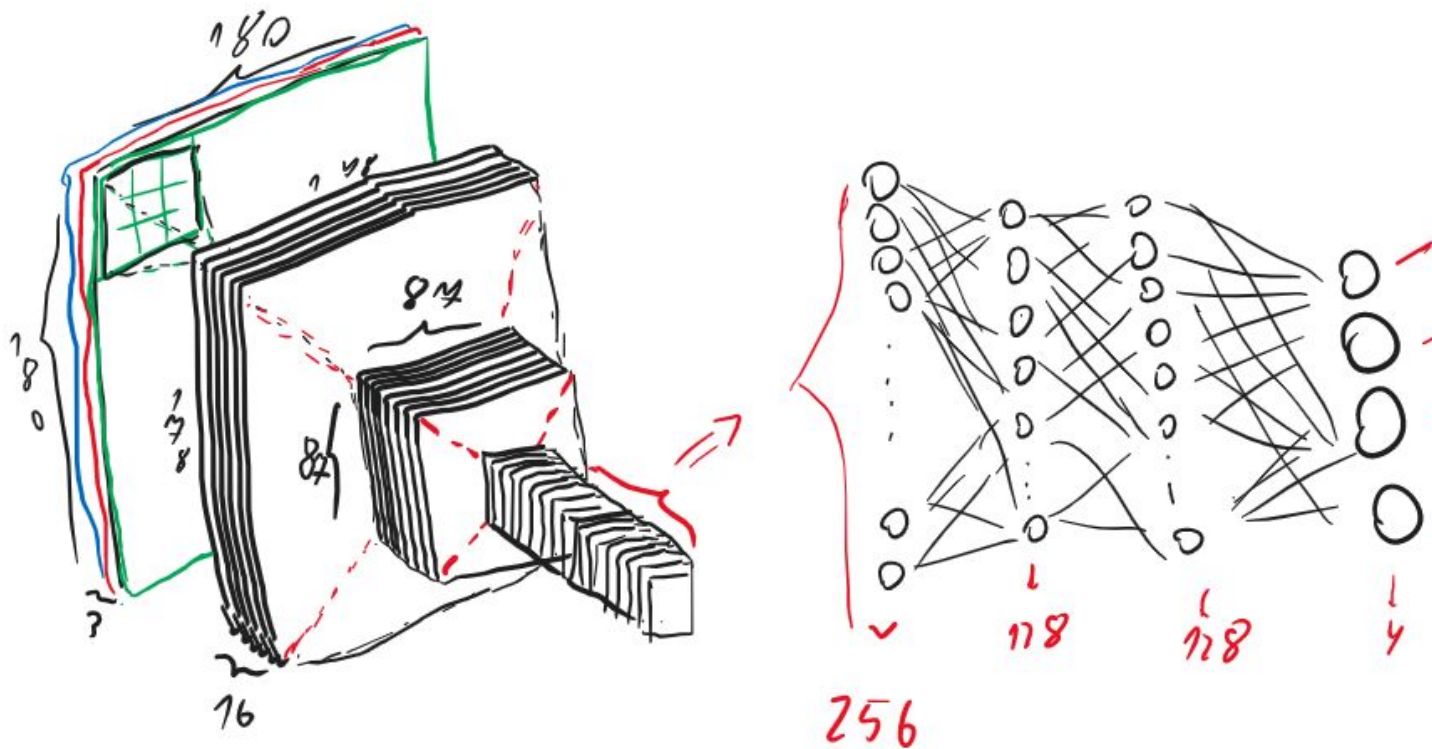


Arhitectura rețelei neurale

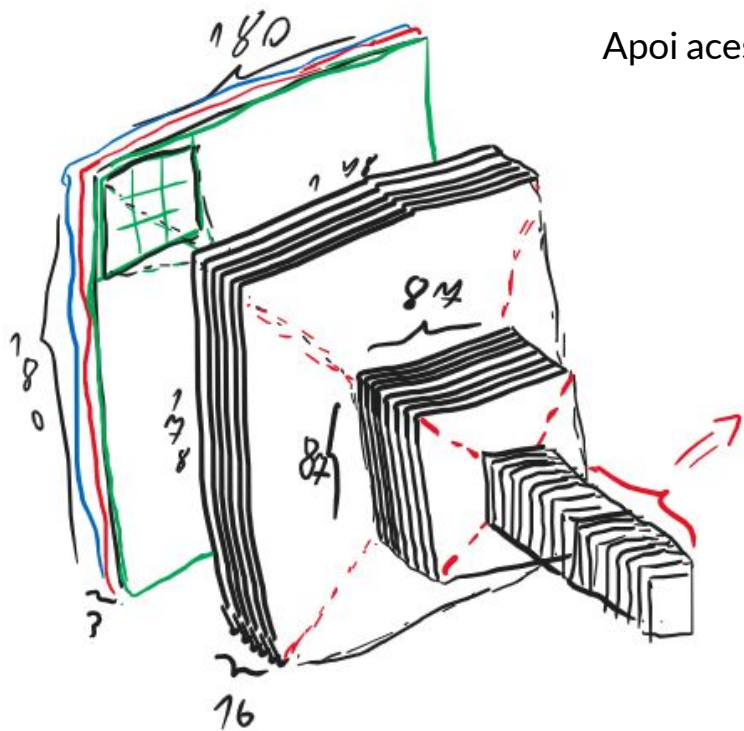


Initial Imaginea este trecuta
prin mai multe straturi convolutionale

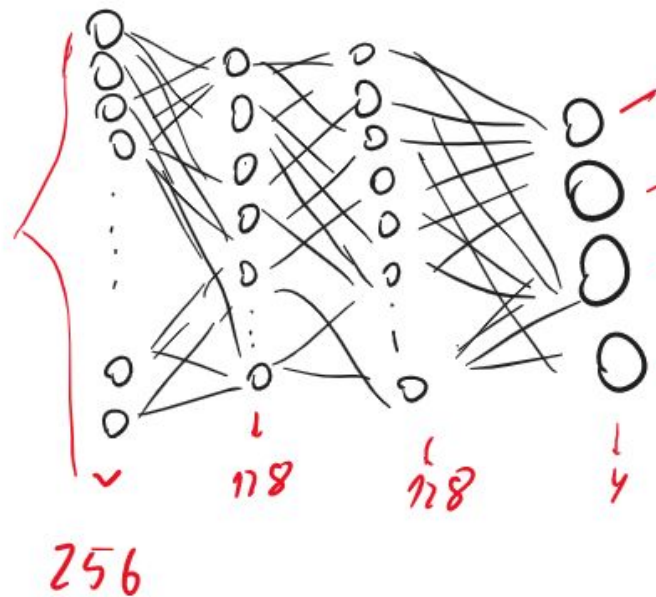
Arhitectura rețelei neurale



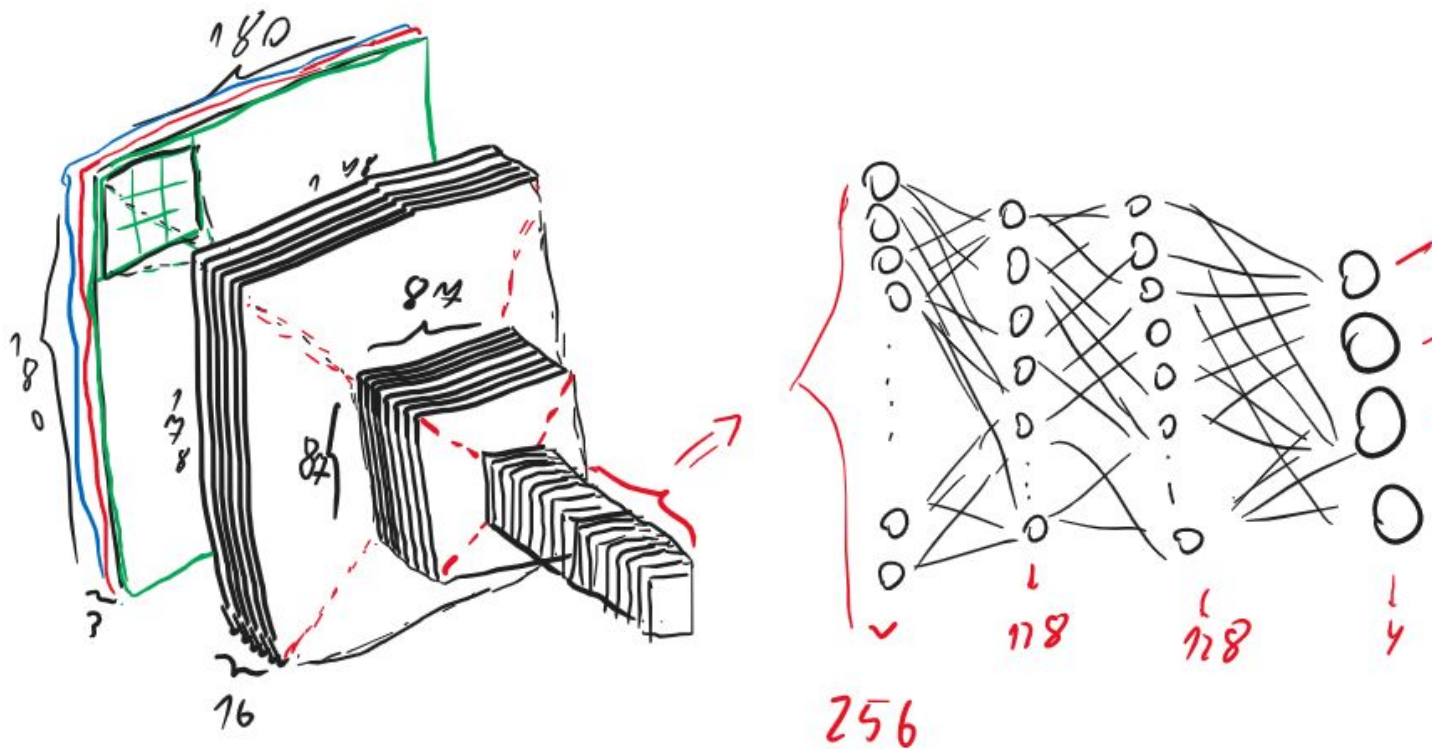
Arhitectura rețelei neurale



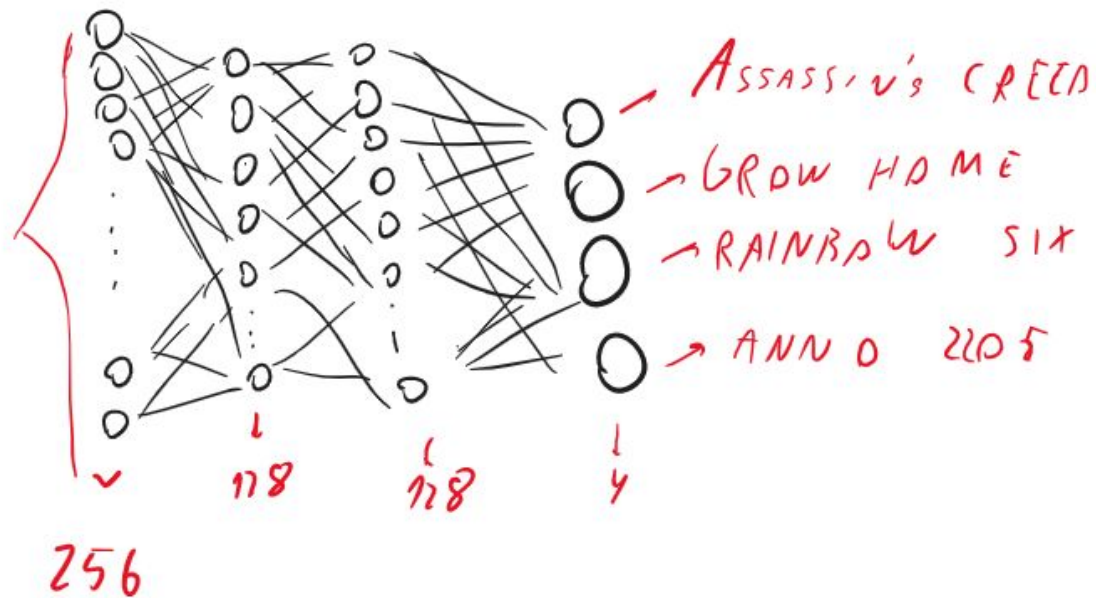
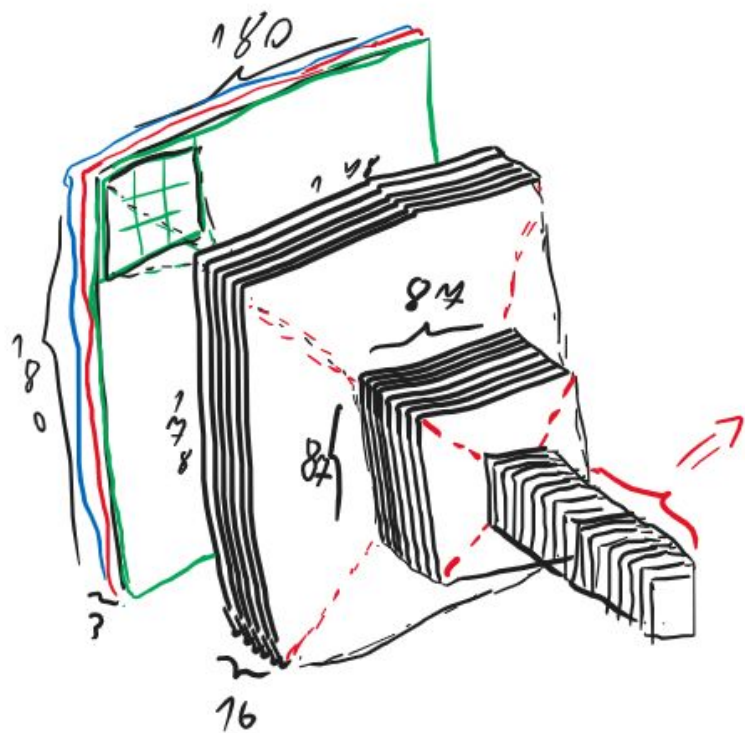
Apoi acestea sunt “aplatizate” in o retea densa de neuroni



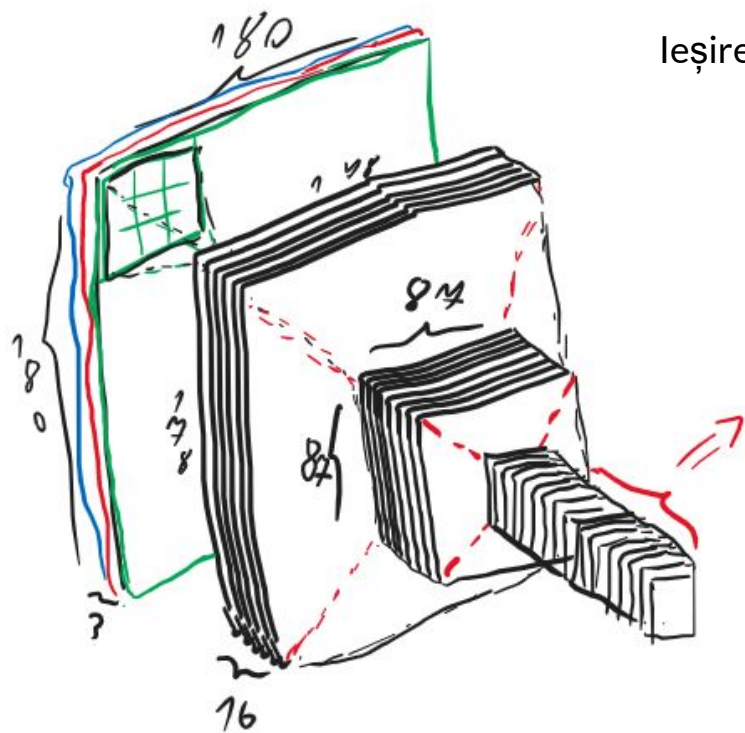
Arhitectura rețelei neurale



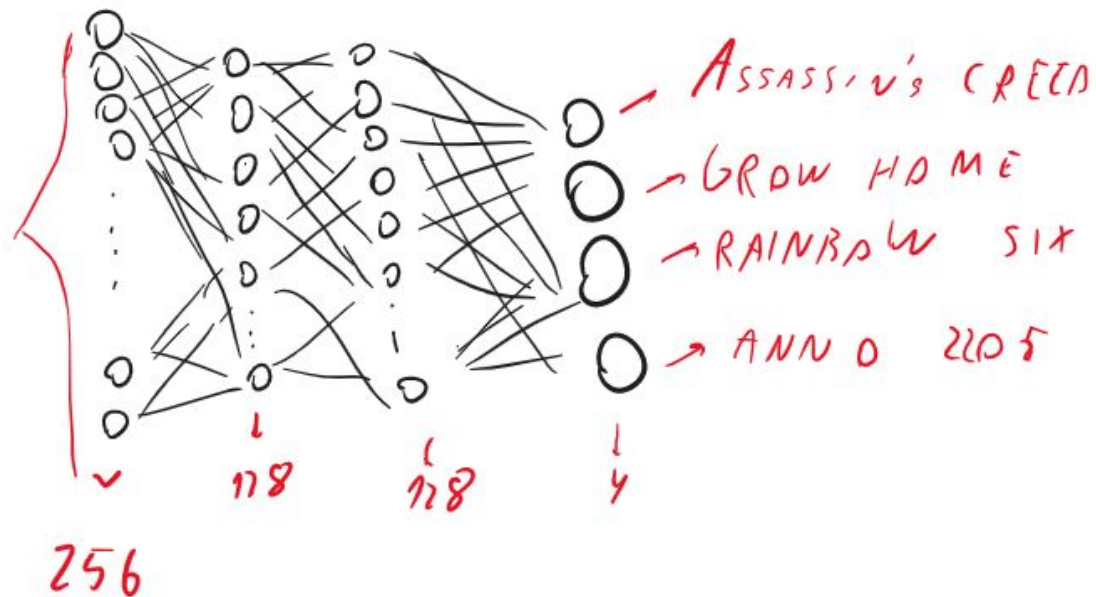
Arhitectura rețelei neurale



Arhitectura rețelei neurale



Ieșirea sistemului este reprezentată de ultimii 4 neuroni (logits)





**Aceasta arhitectura ne permite inclusiv sa
vizualizam straturile convolutionale inițiale**

0

1

1:13

0

?

?

?

?

ROUND 2

ATKCharles2521 ZanGanaX

+120

+100
Kill

Head Shot +20

110 / 110

5

Z

B Blue Stairs



0 0

1 10 127

2 17 96

0 1 1:13 0X ? ? ? ? ?

ROUND 2

ATKCharles2521 ? ? ? ? ?

+120

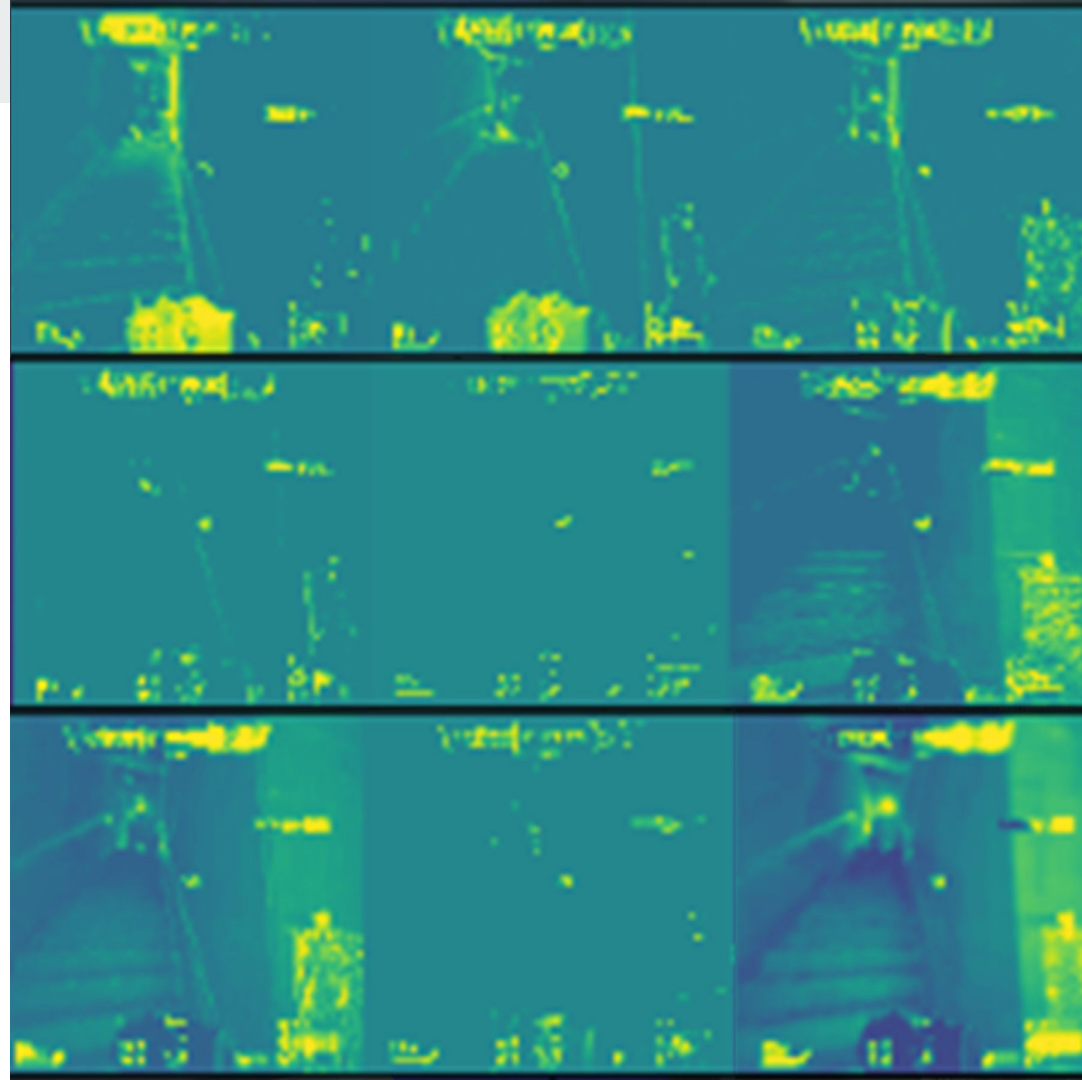
+100
KILL

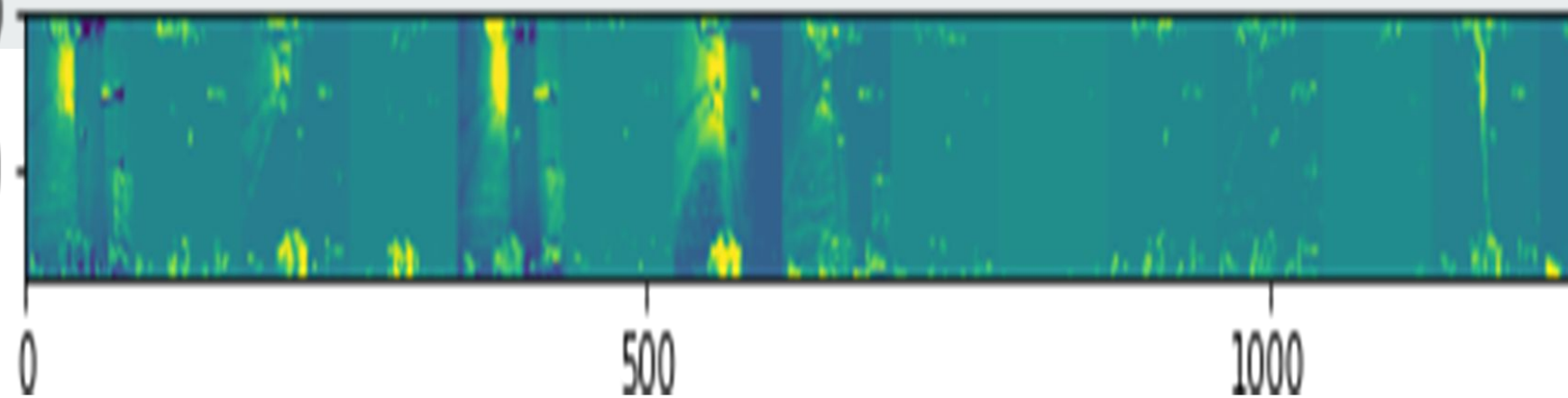
Head Shot +20

110/110

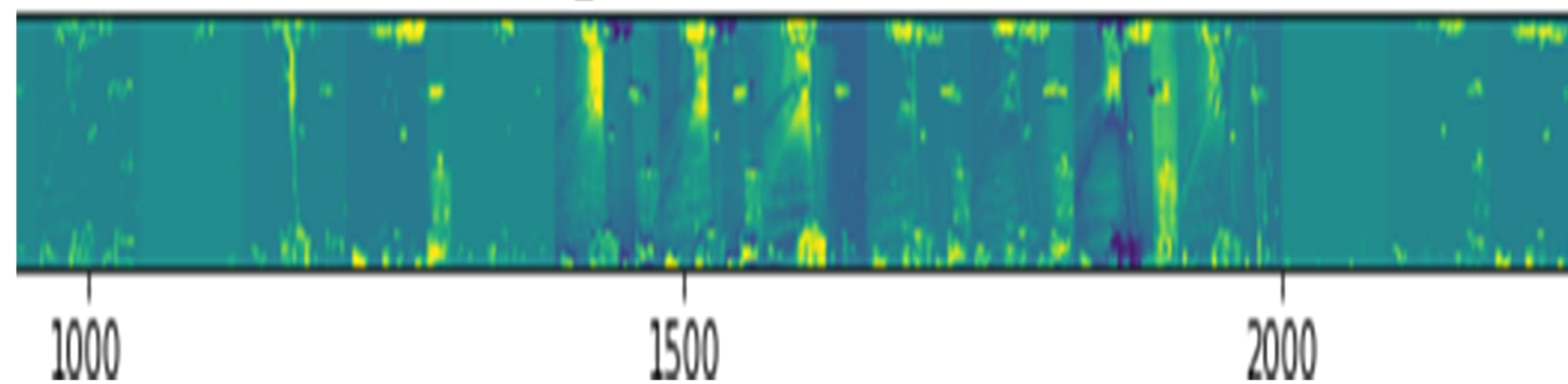
B Blue Stairs

1 10 127
2 17 96





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Obținerea seturilor de date

-> imagini descarcate de pe net folosind extensii de chrome și python



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-> imagini descarcate de pe net folosind extensii de chrome și python

2702 imagini pentru Assassins Creed



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2702 imagini pentru Assassins Creed

1084 - Grow Home



Obținerea seturilor de date

-> imagini descarcate de pe net folosind extensii de chrome și python

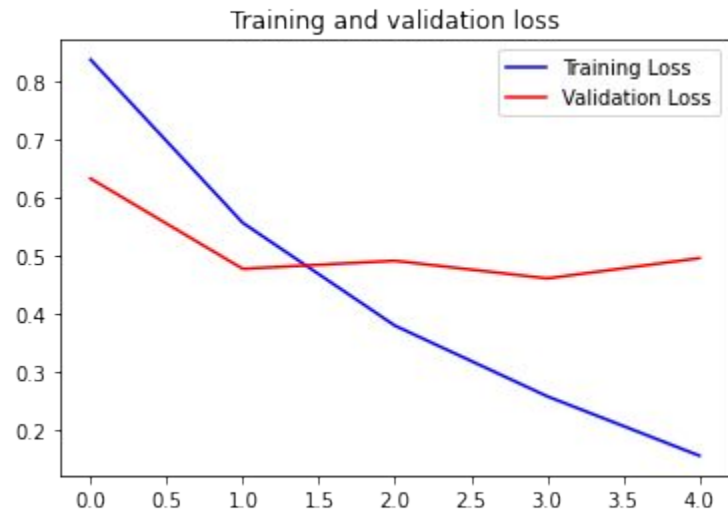
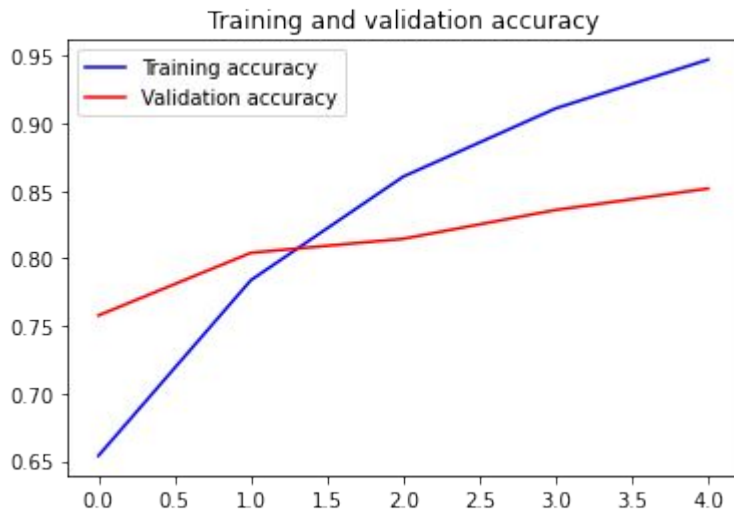
2702 imagini pentru Assassins Creed

1084 - Grow Home

2675 - Rainbow Six

1734 - Anno

Algoritmul converge rapid, chiar după 5 epoci



Edge Cases



Mapele în zone deșertice din R6 / respectiv operatorii cum ar fi Valkyre

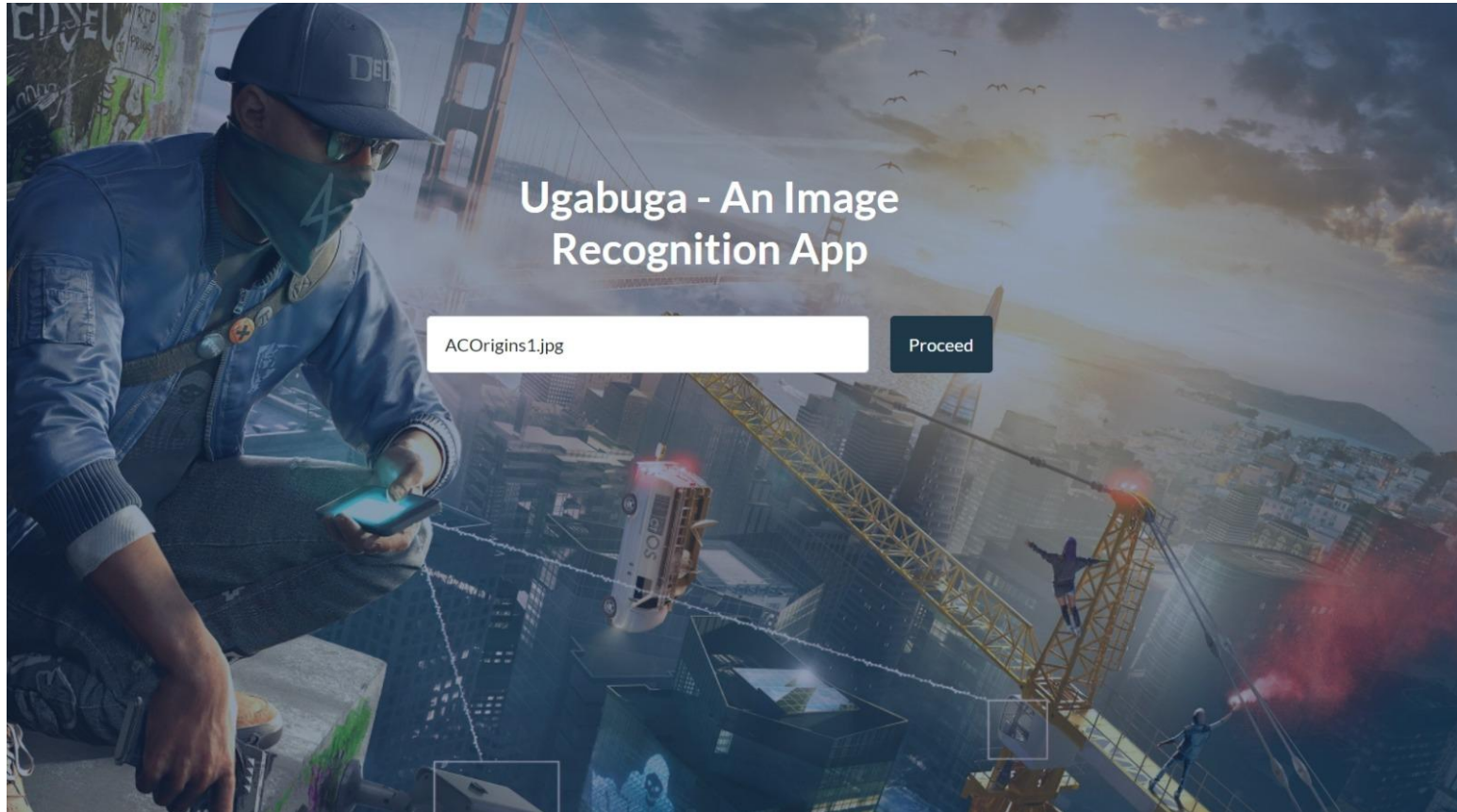
Edge Cases



Scenele de noapte din ACO

respectiv imaginile văzute din unghiuri
asemănătoare cu cele ale camerelor din R6

Demo ->



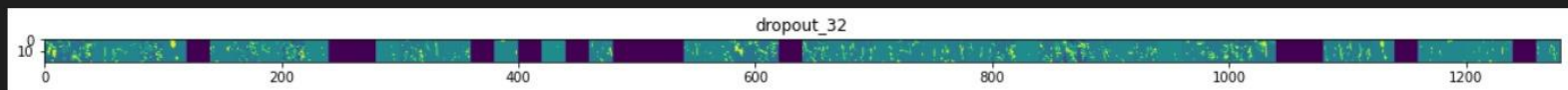
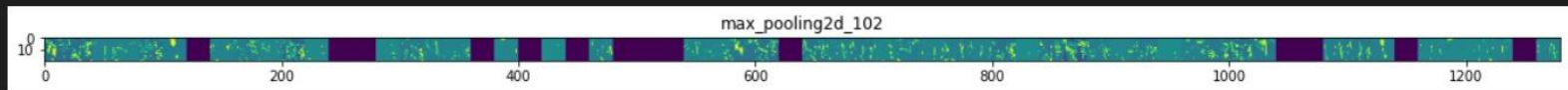
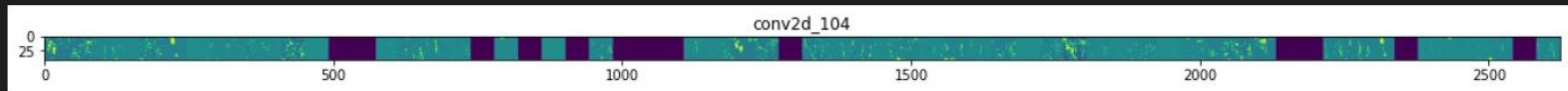
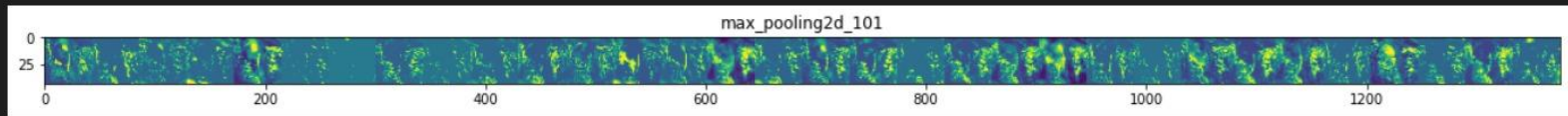
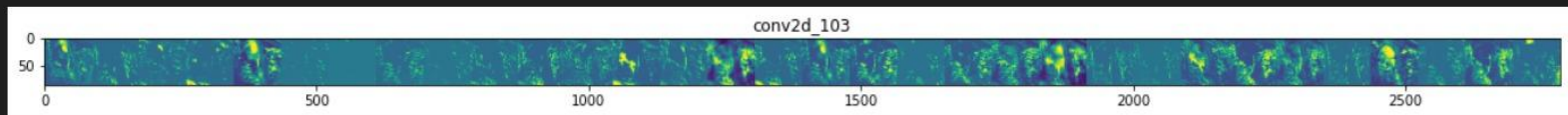
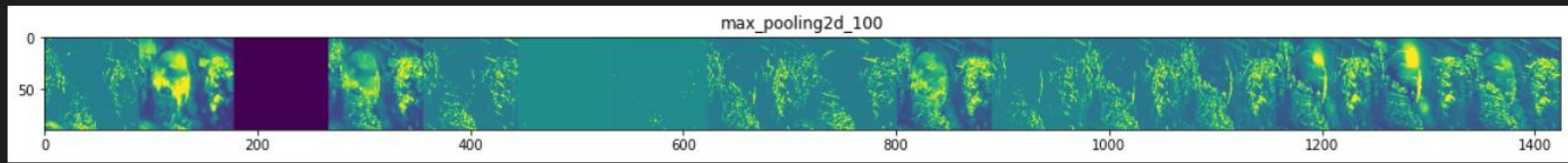


Assassin's Creed Origins
99.92% confidence

Rainbow Six Siege
0.06% confidence

Grow Home
0.01% confidence

Anno 2205
0% confidence



2810131-growhome_0004.jpg -> Grow Home : 100.00
2810143-growhome_0006a.jpg -> Grow Home : 68.69 -> AC Origins : 18.36
2969845-anno_2205_8-100625323-orig.jpg -> Anno 2205 : 100.00
3665387-siege review screenshot (19).jpg -> Rainbow : 100.00
3665393-siege review screenshot (11).jpg -> Rainbow : 99.06
3665399-image.png -> Rainbow : 100.00
ACOrigins1.jpg -> AC Origins : 99.79
ACOrigins2.jpg -> AC Origins : 93.02
ACOrigins3.jpg -> Rainbow : 46.53 -> AC Origins : 34.98 -> Grow Home : 10.52
ACOrigins4.jpg -> AC Origins : 95.32
ACOrigins5.jpg -> Anno 2205 : 99.56
Anno-2205-Shot-(3).jpg -> Anno 2205 : 100.00
Grow-Up-Aerial-View-e1474680372467.jpg -> Grow Home : 99.98
Grow-Up-Coming-To.png -> Grow Home : 99.78
GrowHome_Launch_01_192711-1024x576.jpg -> Grow Home : 99.97
maxresdefault.jpg -> Anno 2205 : 99.93
s6-bcd5de93ce1bc11549593988857f8ab6.jpg -> Anno 2205 : 100.00
ss_aa428eb82138893ab59ebd60016b72cc6c06640a.1920x1080.jpg -> Anno 2205 : 100.00
tom-clancy-s-rainbow-six-siege-pc-game-ubisoft-connect-europe-wallpaper-1.jpg -> Rainbow : 99.82
tom-clancy-s-rainbow-six-siege-pc-game-ubisoft-connect-europe-wallpaper-5.jpg -> Rainbow : 99.27