COMPUTER VISION

Honey Bee Health Detection

Seminario profesional 1
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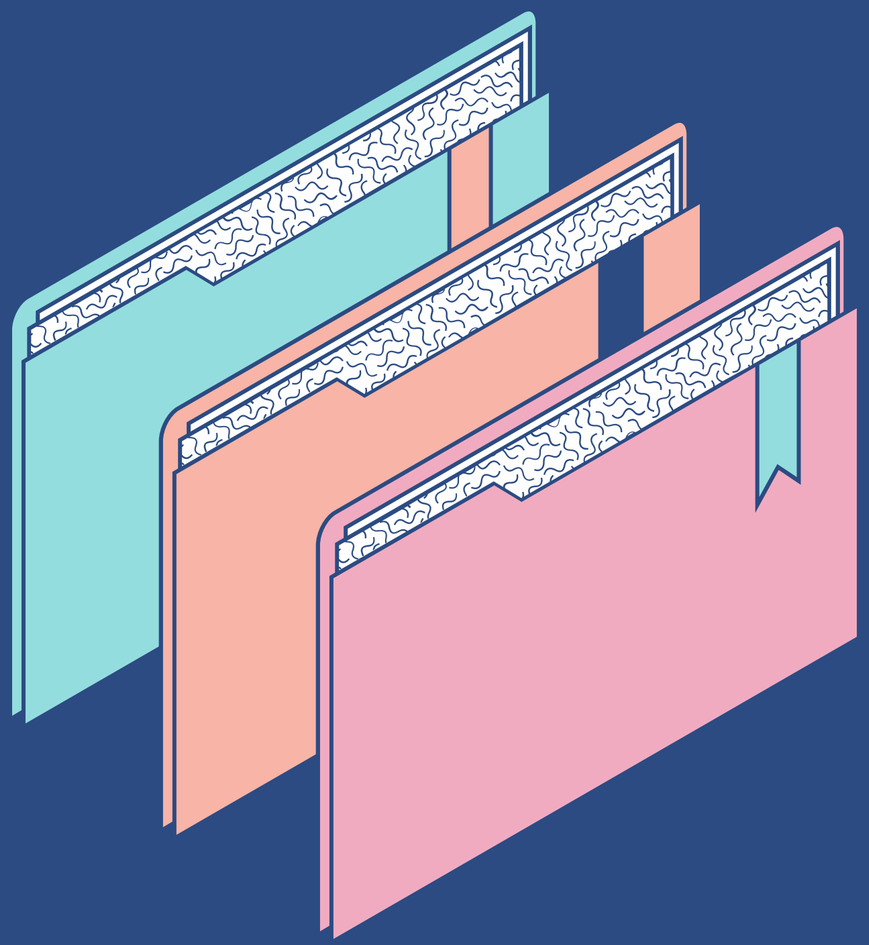
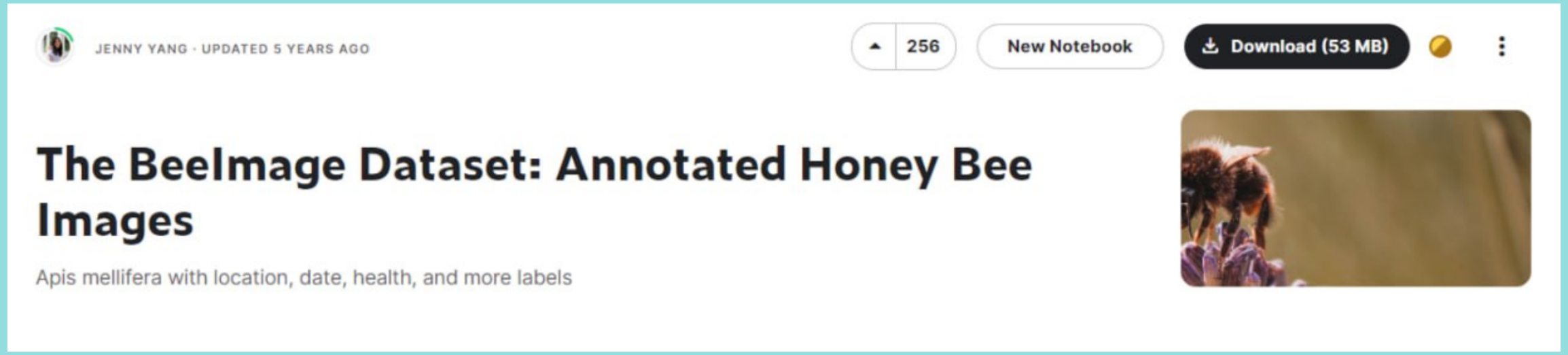


Agenda

TEMAS PRINCIPALES DE ESTA PRESENTACIÓN

- Objetivos
- Información relevante de las abejas
- Metodología
- Implementación
- Resultados
- Mejoras a futuro
- Conclusiones

Competencia



Objetivos

- 1. Comprender el desarrollo de la enfermedad que surgen en las colmenas de las abejas.
- 2. Identificar cuales son las abejas que están enfermas y las que no.
- 3. Evitar que suceda otras pérdidas de colmenas en el siguiente invierno.

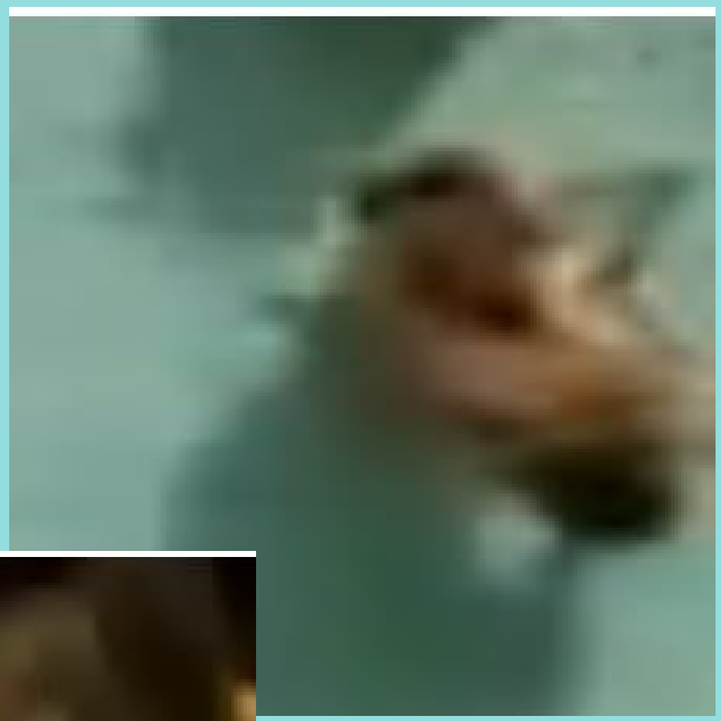
INFORMACIÓN RELEVANTE DE LAS ABEJAS

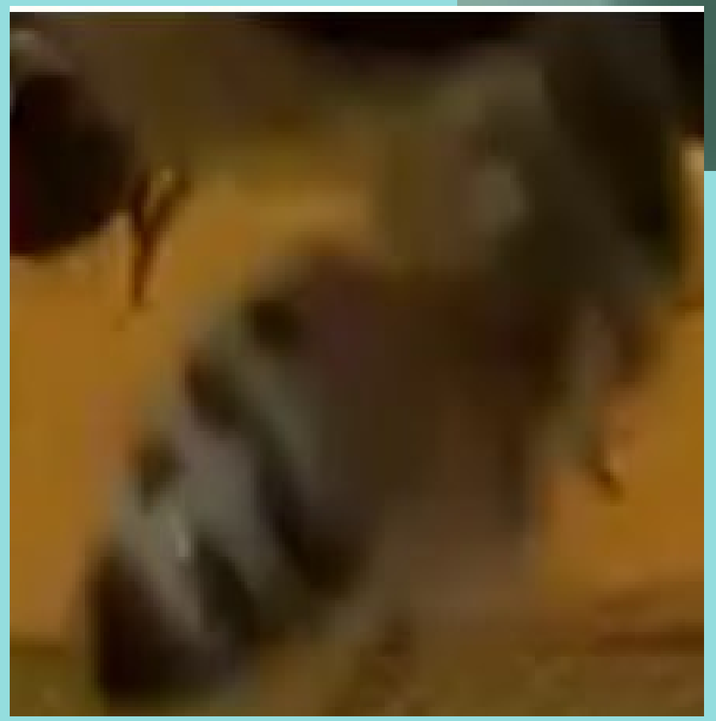
Las abejas son insectos sociales y colaboradores que viven en las colmenas formando grandes colonias, lo que ha proporcionado a las sociedades humanas miel y cera desde hace miles de años

ESTACIONES DEL AÑO

VERANO
PRIMAVERA
INVIERNO
OTOÑO

ENFERMEDADES QUE PADECEN LAS ABEJAS





CASOS QUE PODEMOS ENCONTRAR

METODOLOGIA

- Computer Vision
- Utilizando Redes Convolucionales
- Tipo de Clasificación: Binary Classification.

IMPLEMENTACION

```
[ ] raw_dataset = pd.read_csv("bee_data.csv", sep=",")
    raw_dataset
```

	file	date	time	location	zip code	subspecies	health	pollen_carrying	caste
0	041_066.png	8/28/18	16:07	Alvin, TX, USA	77511	-1	hive being robbed	False	worker
1	041_072.png	8/28/18	16:07	Alvin, TX, USA	77511	-1	hive being robbed	False	worker
2	041_073.png	8/28/18	16:07	Alvin, TX, USA	77511	-1	hive being robbed	False	worker
3	041_067.png	8/28/18	16:07	Alvin, TX, USA	77511	-1	hive being robbed	False	worker
4	041_059.png	8/28/18	16:07	Alvin, TX, USA	77511	-1	hive being robbed	False	worker
...	...	...	...	...	...	...	...	...	...
5167	027_011.png	8/20/18	10:03	San Jose, CA, USA	95124	-1	healthy	True	worker
5168	027_007.png	8/20/18	10:03	San Jose, CA, USA	95124	-1	healthy	True	worker
5169	027_013.png	8/20/18	10:03	San Jose, CA, USA	95124	-1	healthy	False	worker
5170	027_012.png	8/20/18	10:03	San Jose, CA, USA	95124	-1	healthy	False	worker
5171	027_014.png	8/20/18	10:03	San Jose, CA, USA	95124	-1	healthy	False	worker

5172 rows × 9 columns

```
[ ] # Check all the unique values
    new_dataset["health"].unique()
```

```
array(['hive being robbed', 'healthy', 'few varrao, hive beetles',
       'ant problems', 'missing queen', 'Varroa, Small Hive Beetles'],
      dtype=object)
```

Directorios

```
# Directories
base_dir = "./data/"
train_dir = base_dir + "train/"
test_dir = base_dir + "test/"
healthy_dir = base_dir + "healthy"
nonhealthy_dir = base_dir + "nonhealthy"
```

Primer modelo

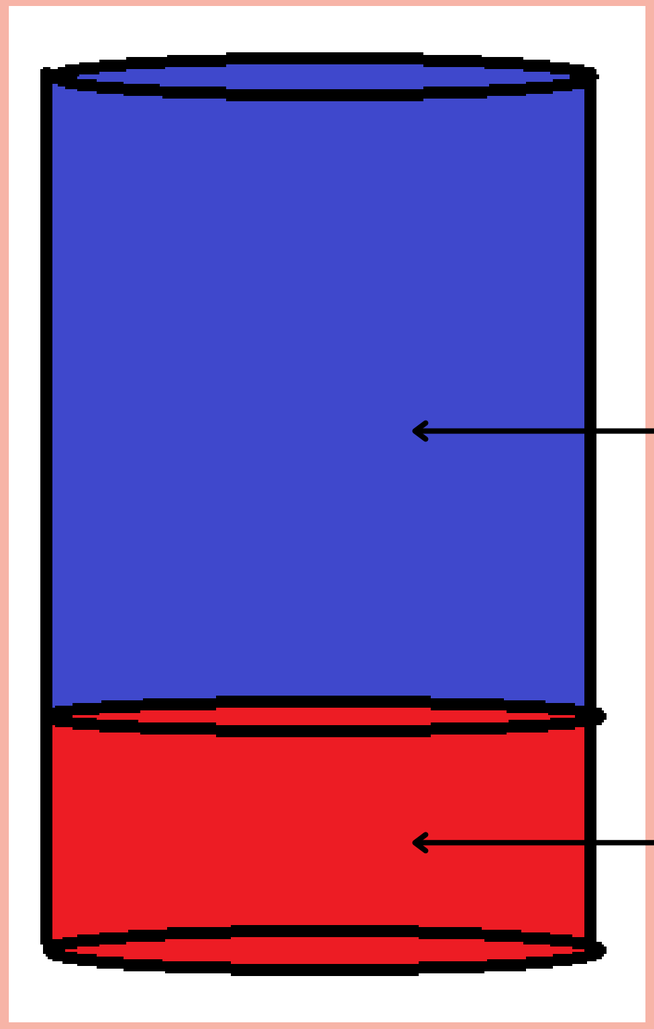
```
# Counting total of files ir
for specie in ["healthy", "r
  DIR = "./data/" + specie
  print(specie, len([name fo
                     name ir
```

```
healthy 3384
nonhealthy 1051
```

Segundo modelo

```
# Counting total of file
for specie in ["healthy"
  DIR = "./data/" + spec
  print(specie, len([nam
                     nam
```

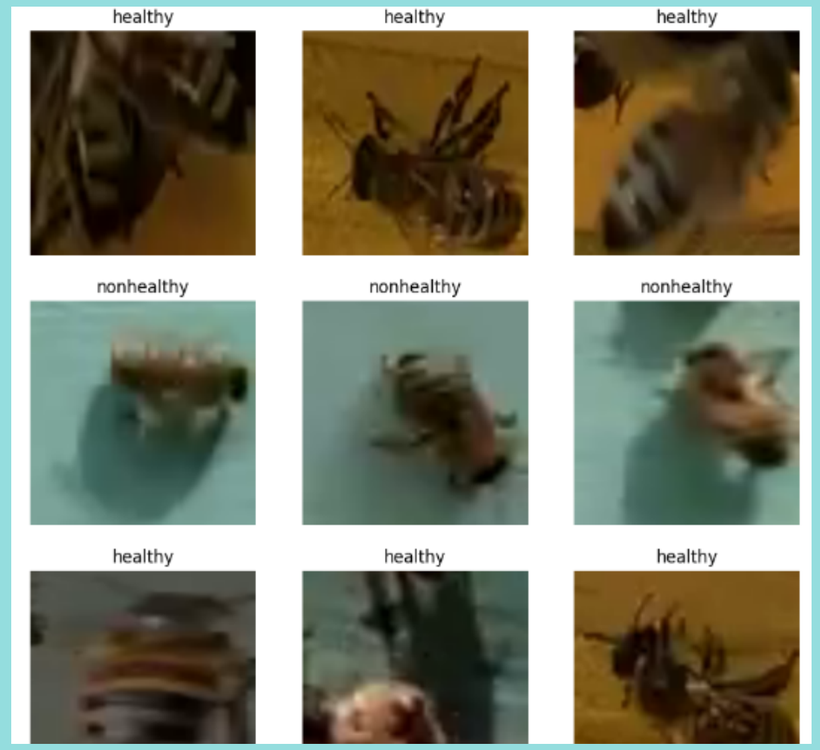
```
healthy 3384
nonhealthy 1788
```

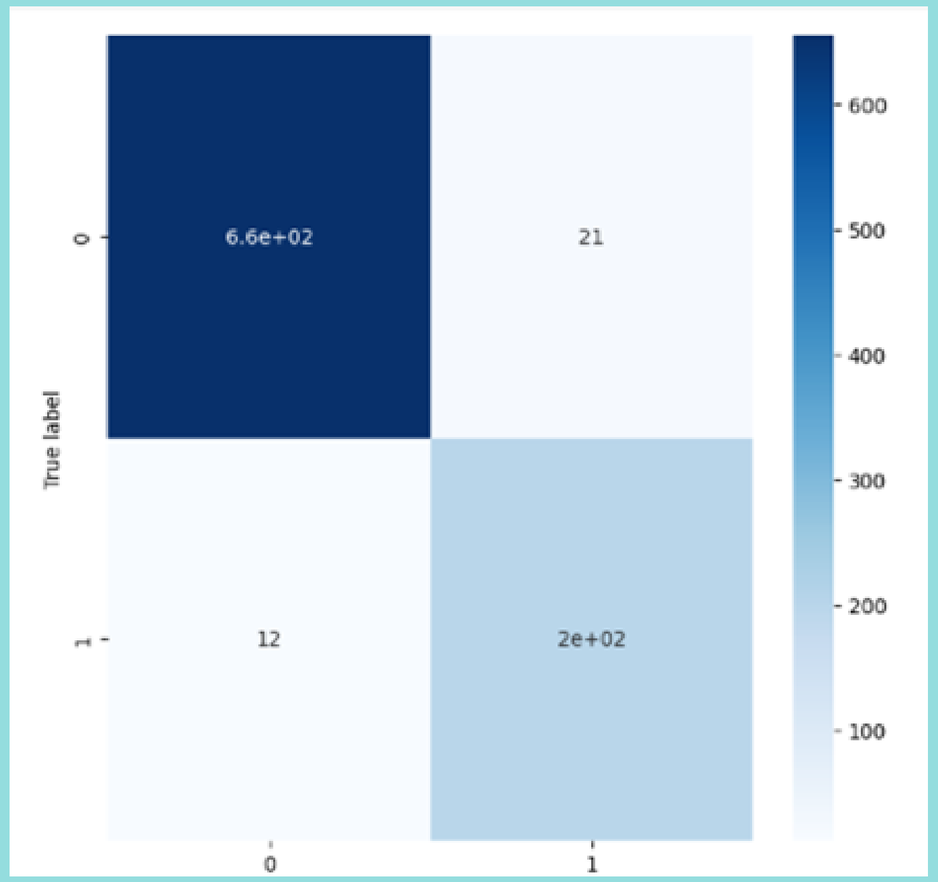


Train 80%

Test 20%

RESULTADOS
Primer modelo

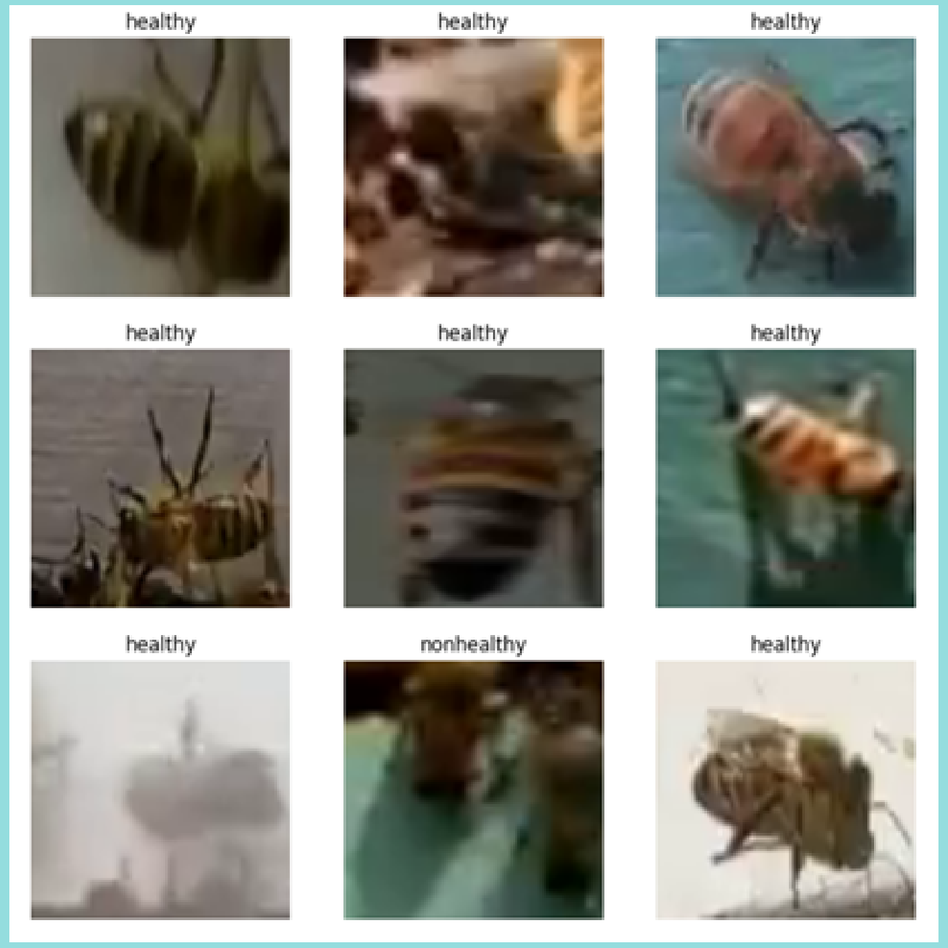




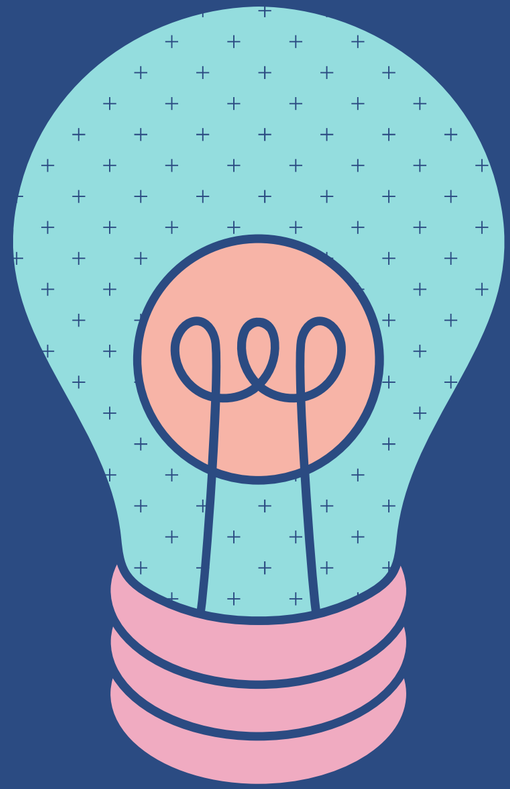

```
model.evaluate(clean_test_dataset)

14/14 [==============================] - 4s 203ms/step - loss: 0.1087 - accuracy: 0.9628
[0.10870561003684998, 0.96275395154953]
```

RESULTADOS
Segundo modelo

```
- loss: 7.3692 - accuracy: 0.6657
```



MEJORAS A FUTURO Y CONCLUSIONES



GRACIAS POR SU ATENCIÓN

SEMINARIO PROFESIONAL 1