

# TFG informe inicial

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## 1 Data

### 1.1 Initial Data

- **Embedding matrix** of size (50000, 12416), con 62080000 features.
- **labels** Labels vector of size 50k which every label is in numeric format (0,999)
- **synsets = synset0 synset1 synset2 ...** The set of synsets that we will analyze:  
*synsets = [living\_things, mammal, dog, hunting\_dogs]*
- **categories = {-1 0 1 }** The possible values of the features.

### 1.2 Generated Data

- **synset\_index\_hyponim.txt** A list with all the hyponims of every synset.
- **synset\_index.txt** For each synset a list with the index of the elements of the hyponim list in the embedding.
- Un diccionario con la cantidad de imágenes que tiene cada feature para cada category.
- **features\_per\_image[synsets].pkl** dfd
- **features\_per\_layer[synsets].pkldsf**
- **Images/\_per\_feature\_per\_synset[synsets].pkl** Genera un diccionario tal que:  
`dict[features][category][synset] = cantidad e imagenes del synset que tienen esta categoria en cuestión.`
- **intra\_synset[synsets].pkldfsf**

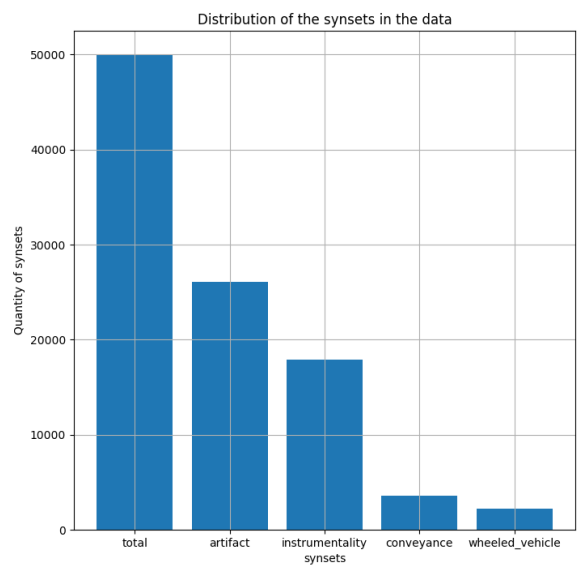
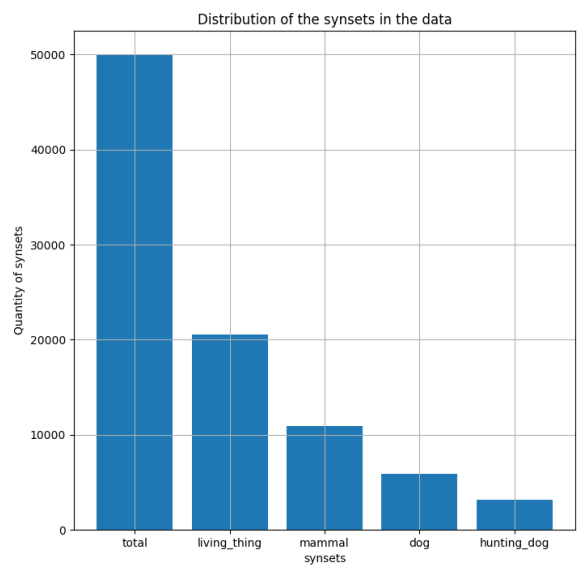
## 2 Objetivos

- Estadísticas del dataset por imagen del conjunto de synsets (**hecho**)
- Estadísticas internas para cada synset (que synsets son subconjunto de cual y en que proporción) (**hecho**)
- Estadísticas totales de la distribución de las features respecto a toda la matriz de imágenes. (**solo faltan grafiquillas**)
- Estadísticas totales de la distribución de las features respecto a toda la matriz de imágenes por layer. (**falta escribir + grafiquillas**)
- Estadísticas de las features respecto el subconjunto de imágenes de cada synset. (**faltan grafiquillas**)
- Estadísticas de las features respecto el subconjunto de imágenes de cada synset por layer. (**falta todo**)
- Distribución de imágenes por feature (para 1, -1, 0):
  - respecto a todas las imágenes
  - respecto a cada uno de los subconjuntos de imágenes de cada synset

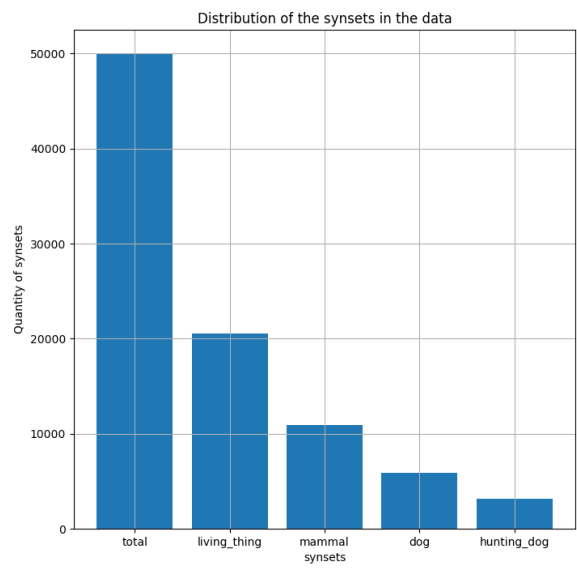
**está calculado, falta escribir**

- Repetir para el resto de embeddings
- Montarlo para que me genere todo automático para cada conjunto de synsets.
- Hacer que guarde todo en maps
- Features por imagen: Para cada imagen cuantas features (de cada category) se activan. Usando todos los valores obtenidos dibujo un histograma para cada category de feature. Con el eje de las x siendo la frecuencia y el de las y la cantidad de imágenes que cumplen eso.
- Imágenes por feature: Para cada features (de cada category), cuantas imágenes toman este valor. Usando todos los valores obtenidos dibujo un histograma para cada category de feature. Con el eje de las x siendo la frecuencia y el de las y la cantidad de imágenes que cumplen eso.
- Comprobar si dentro de un mismo synset hay features que se den con 1 y -1.
- Hacer las distribuciones de la suma.
- Ordenar del código y generar una documentación y tests.

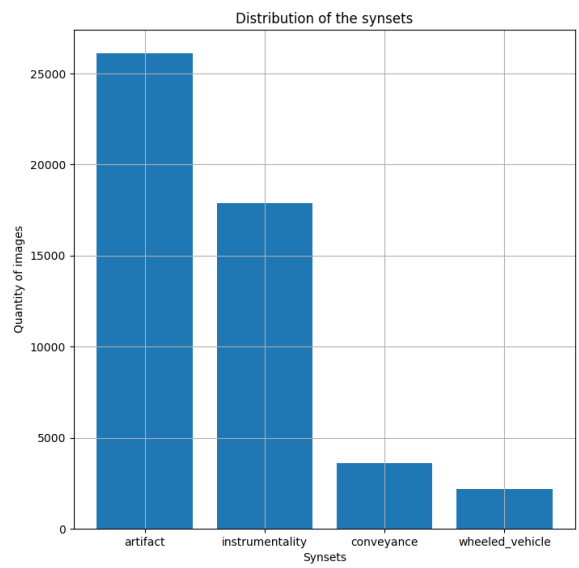
### 3    Análisis Base



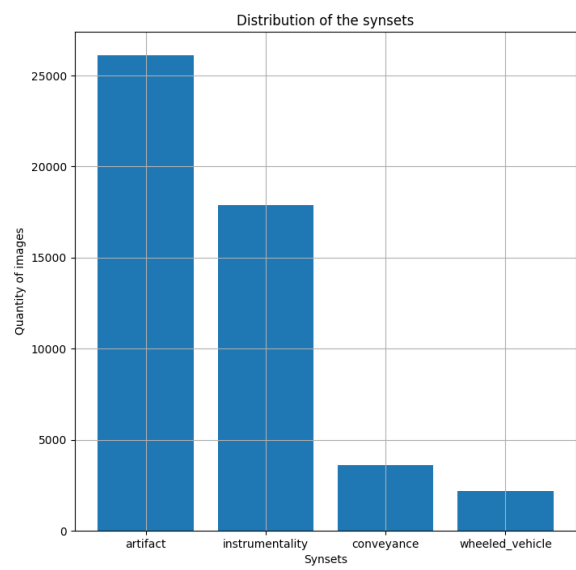
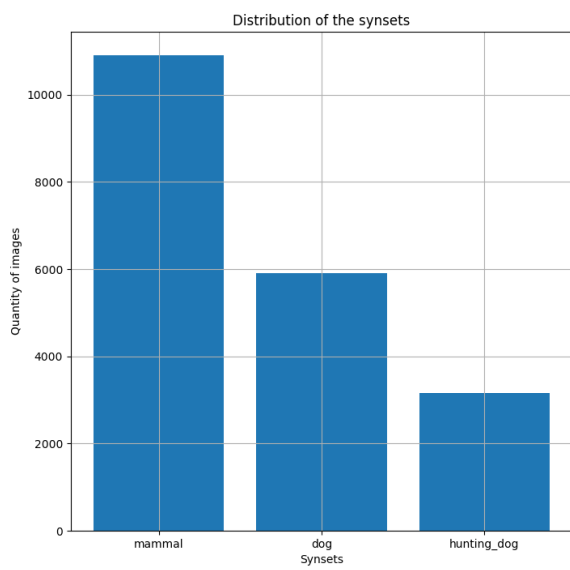
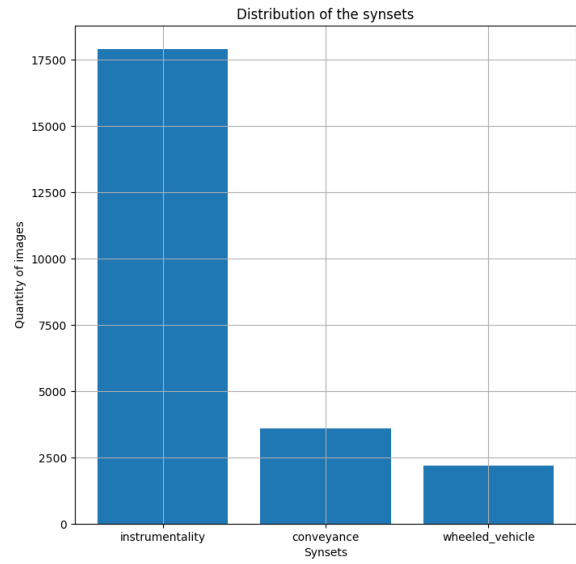
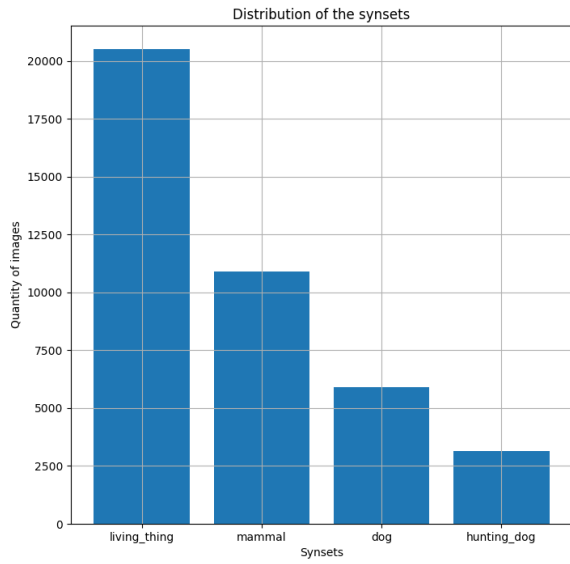
#### 3.1    Intra sinset

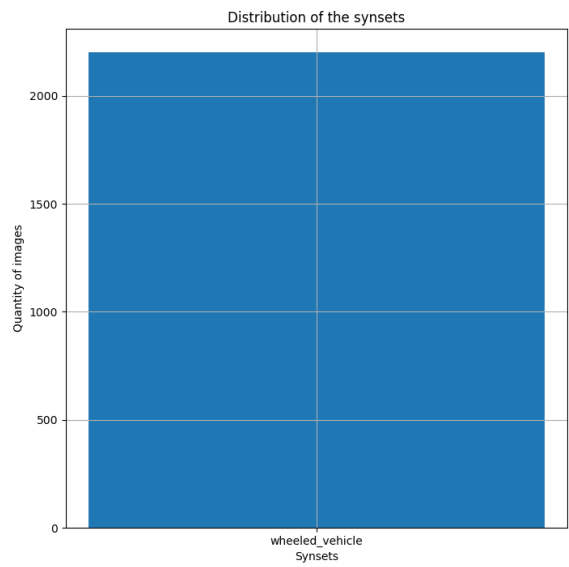
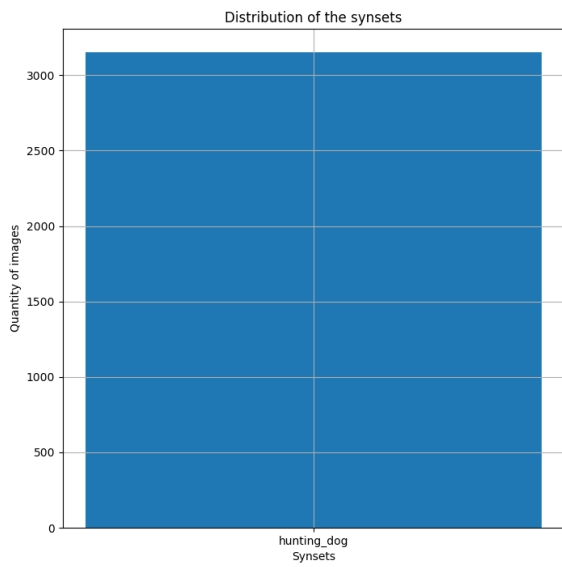
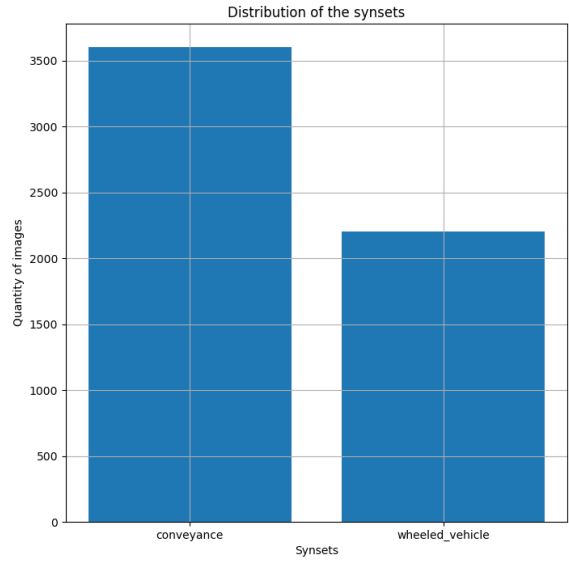
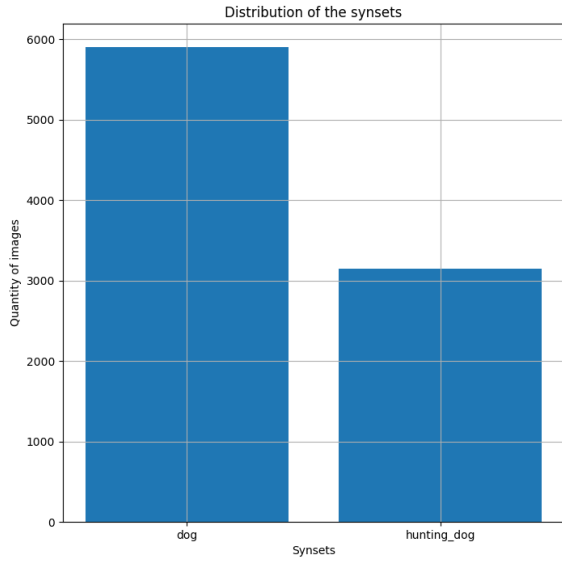


Living Things

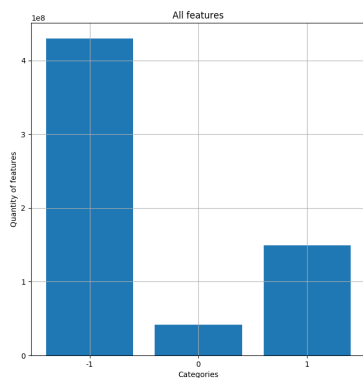


Non Living Things

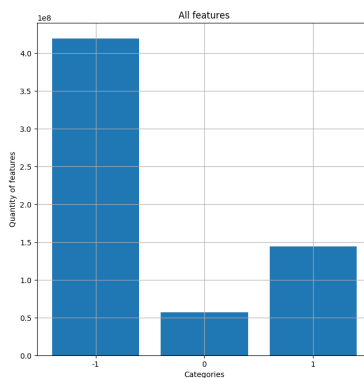




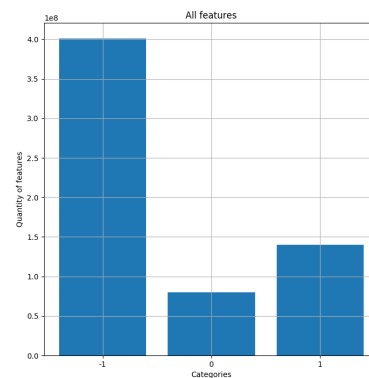
## 3.2 Distribución total de las features



Embedding 19

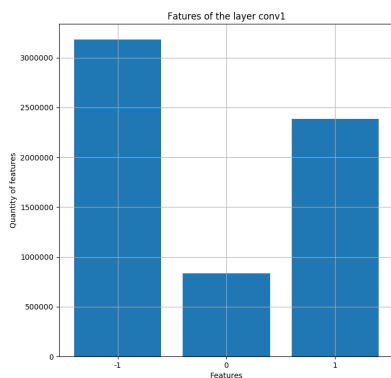


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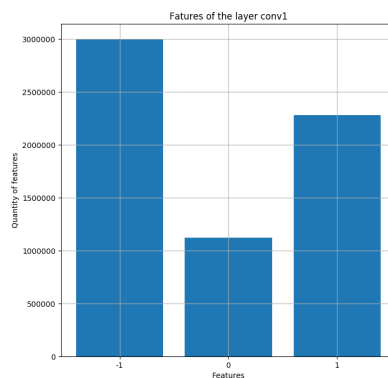


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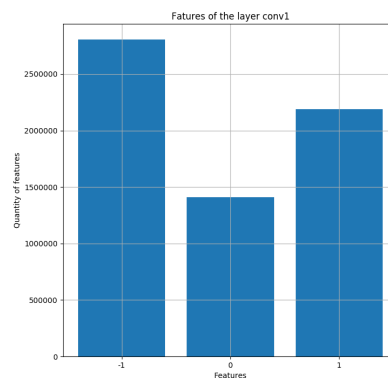
## 3.3 Distribución de las features por layer



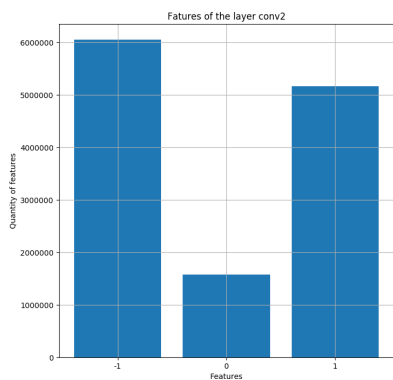
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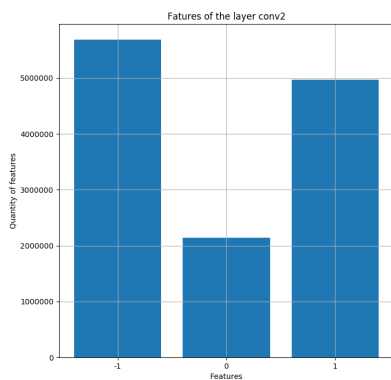
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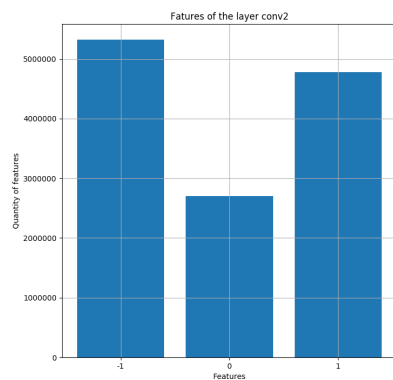
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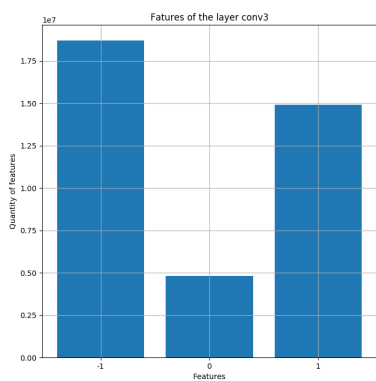
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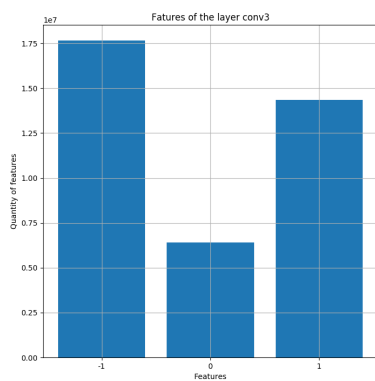
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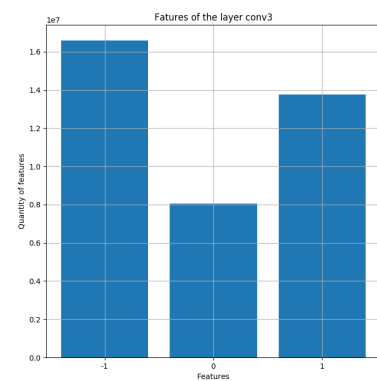
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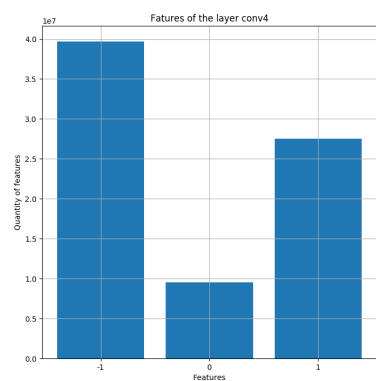
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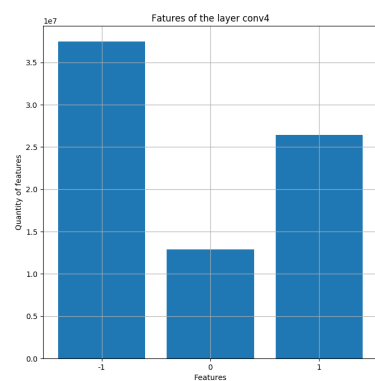
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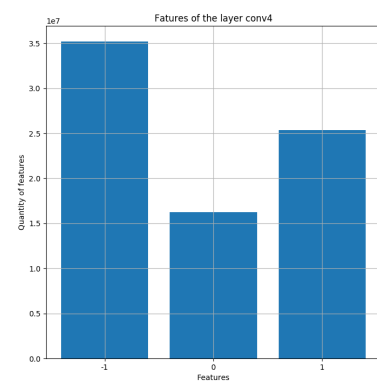
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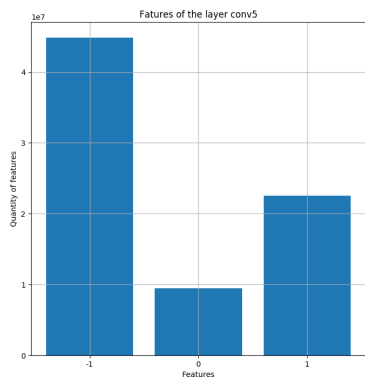
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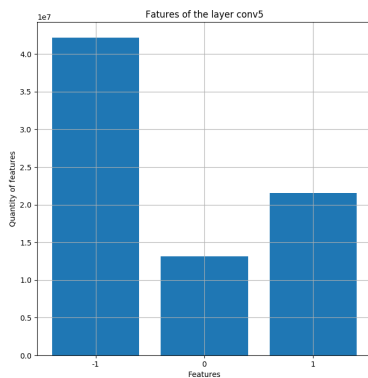
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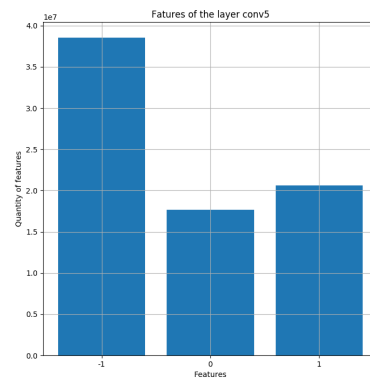
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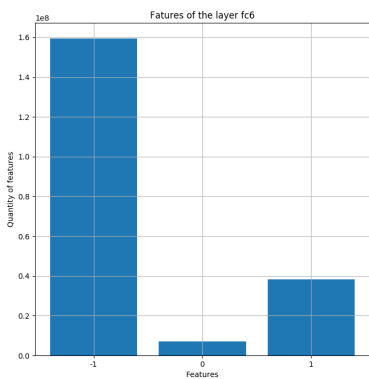
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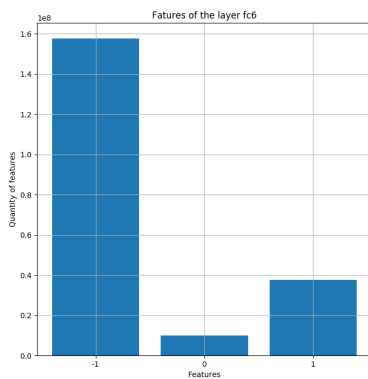
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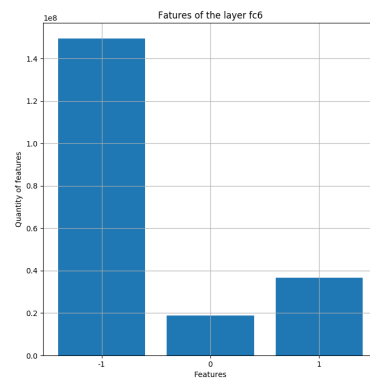
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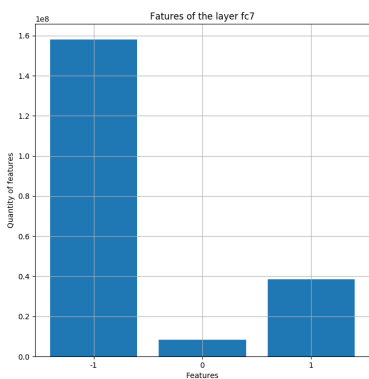
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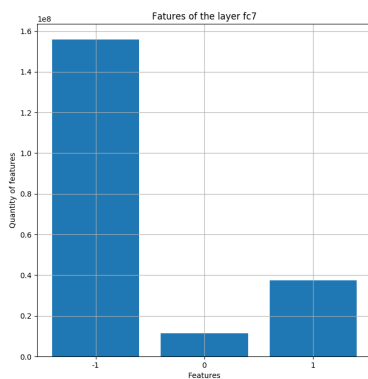
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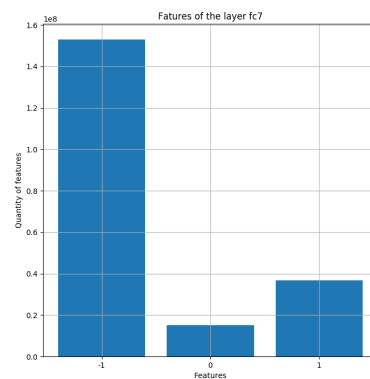
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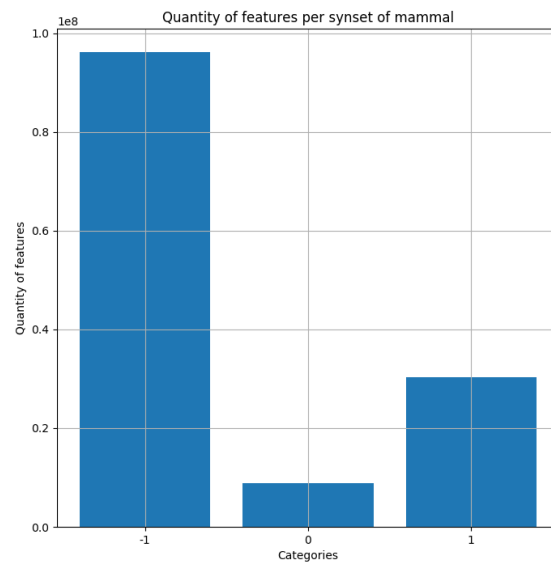
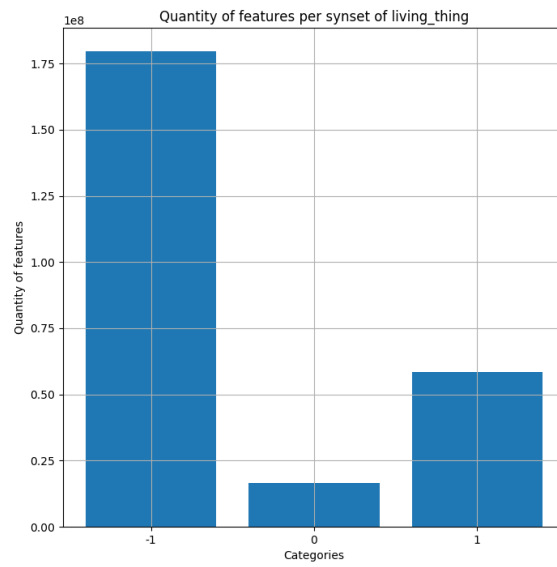
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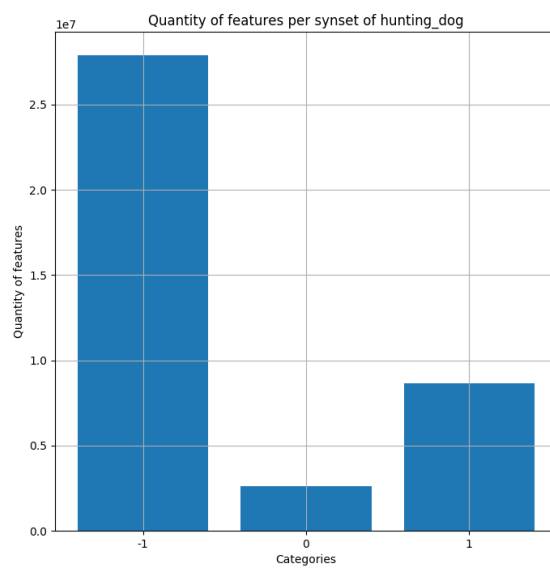
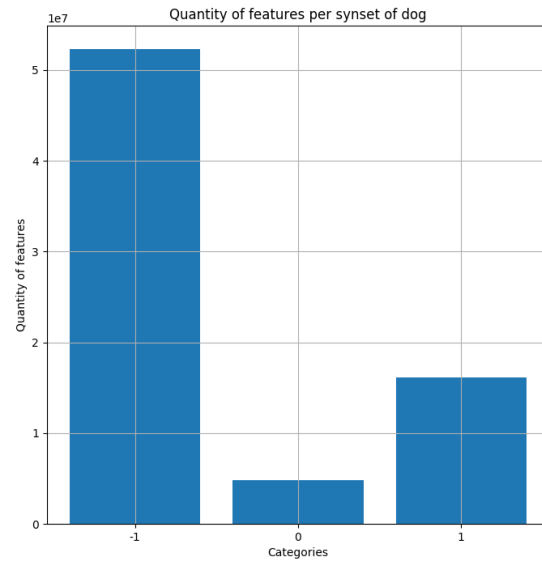


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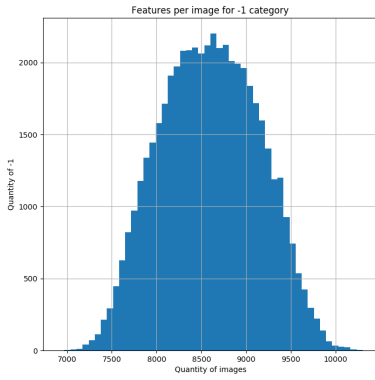
### 3.4 Distribución de las features por synset



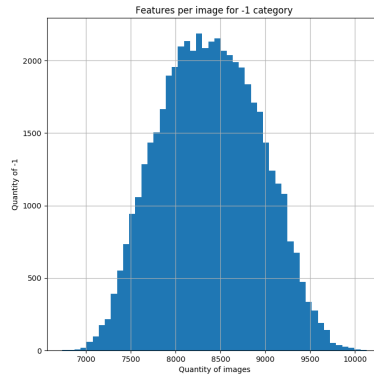


### 3.5 Features per image

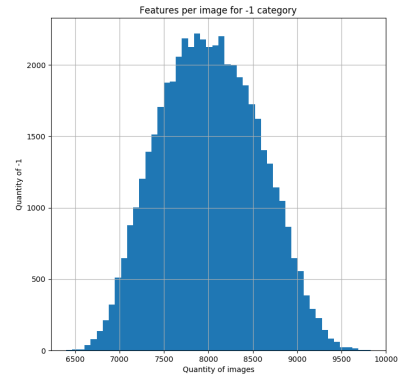
There are for each image the total counting of features active, for the different possible categories  $(-1, 0, 1)$ :



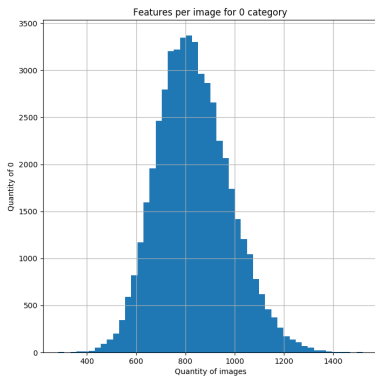
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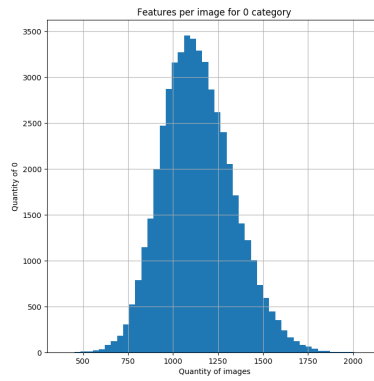
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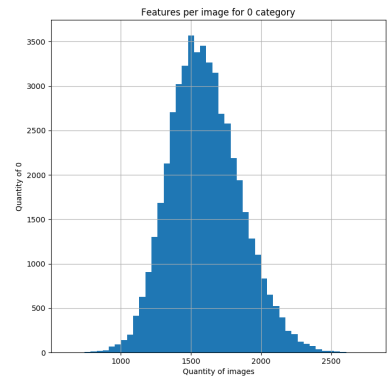
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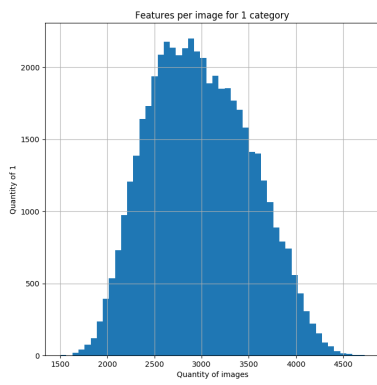
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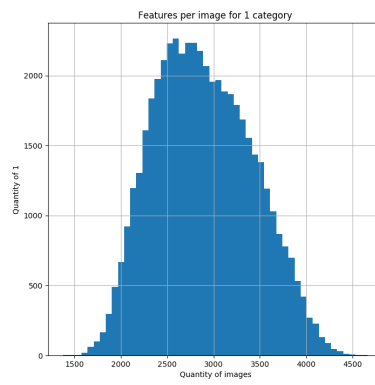
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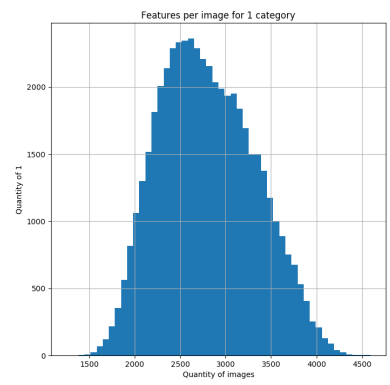
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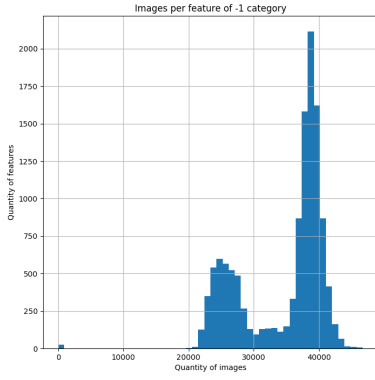
Embedding 25



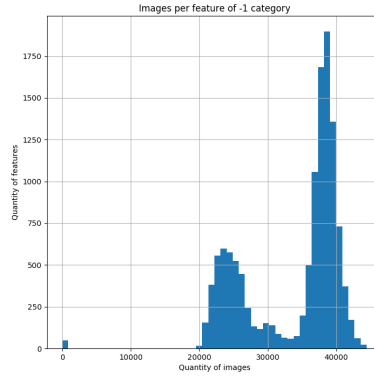
Embedding 31

### 3.6 Images per feature

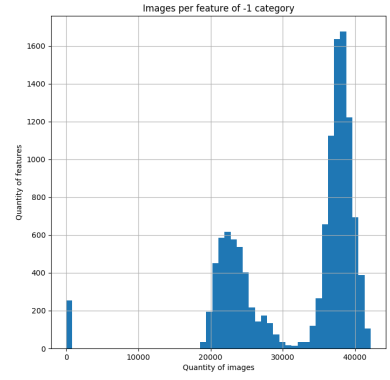
Now I calculate for each feature how many images activate in each specific category:



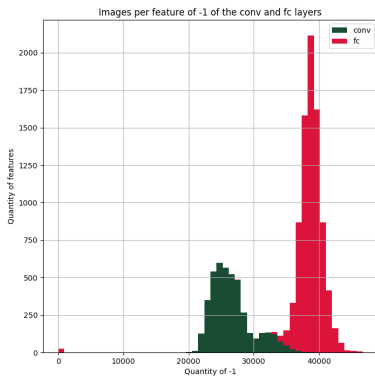
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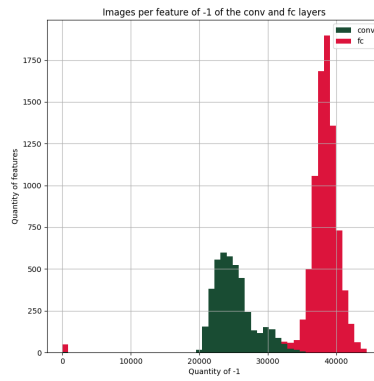
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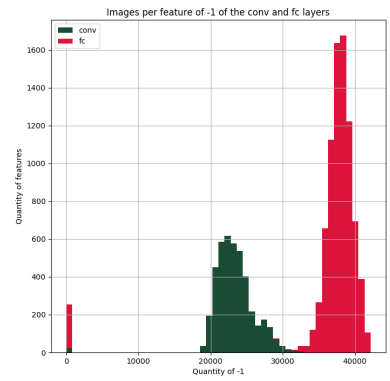
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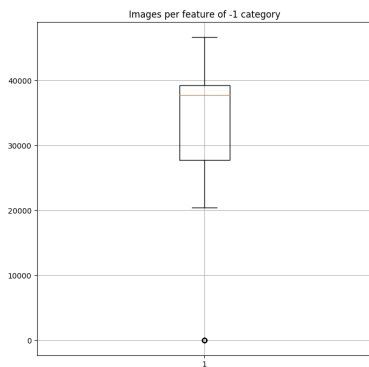
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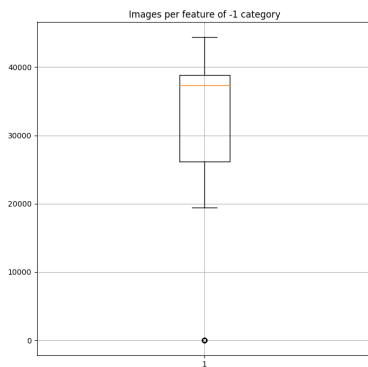
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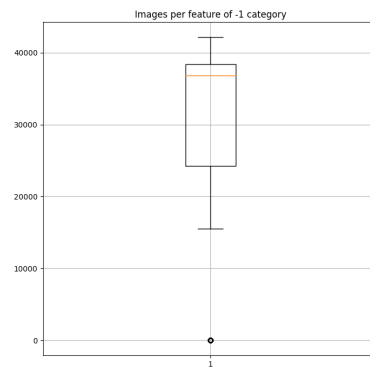
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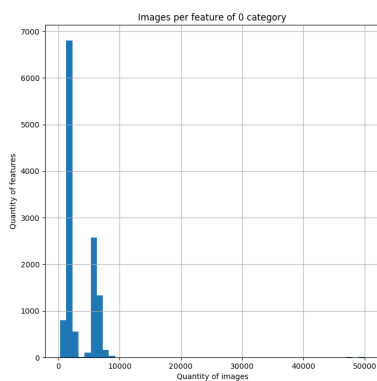
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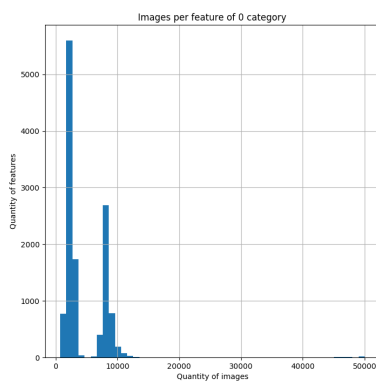
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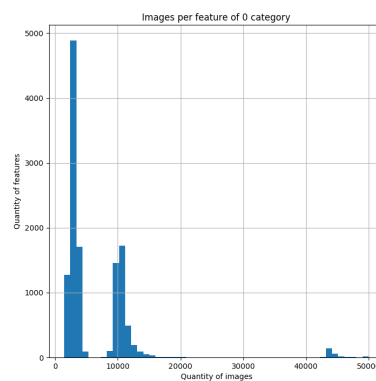
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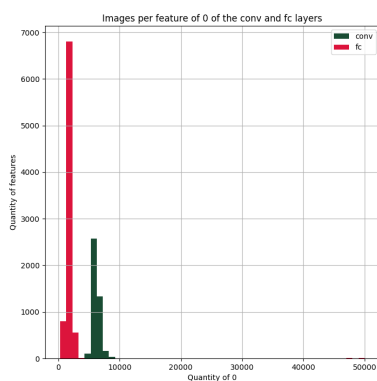
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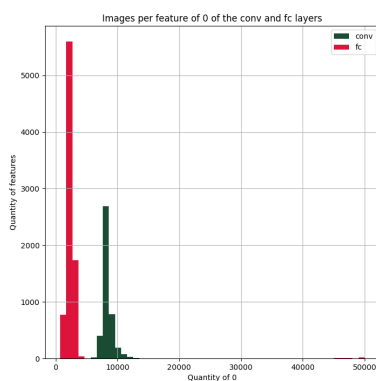
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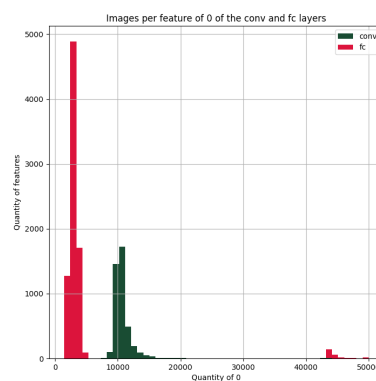
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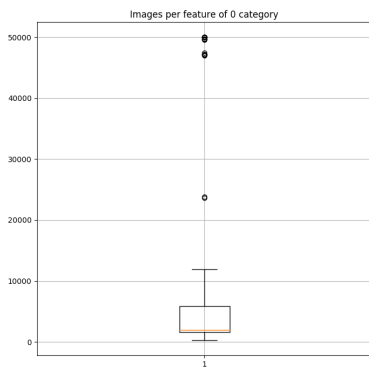
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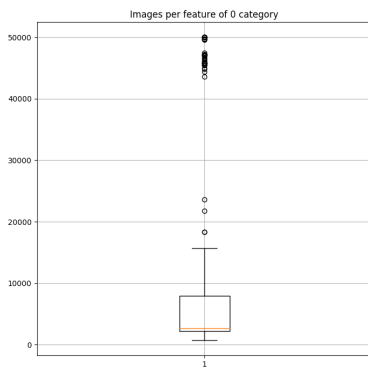
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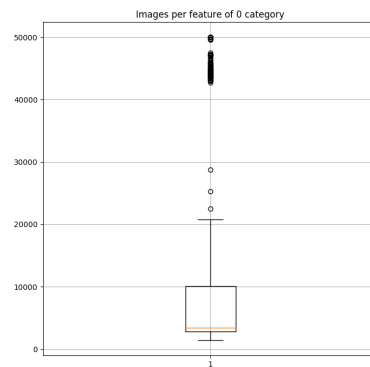
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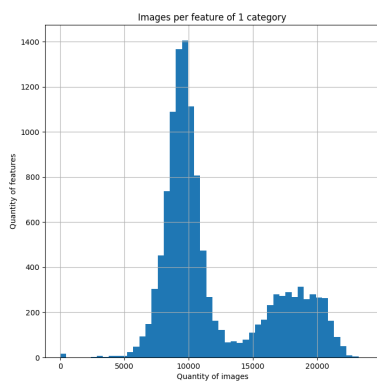
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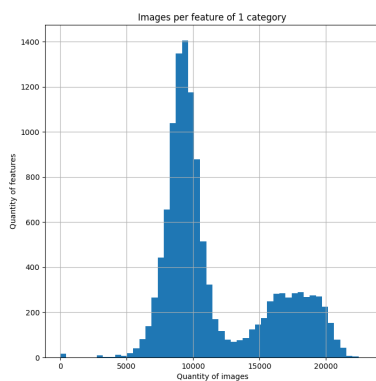
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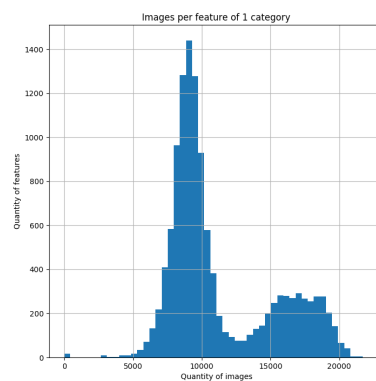
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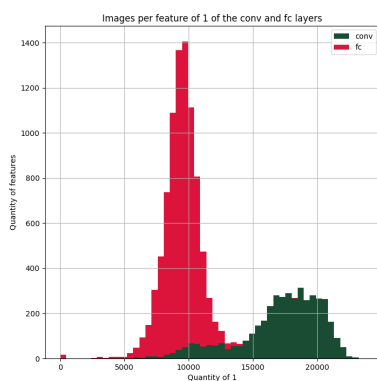
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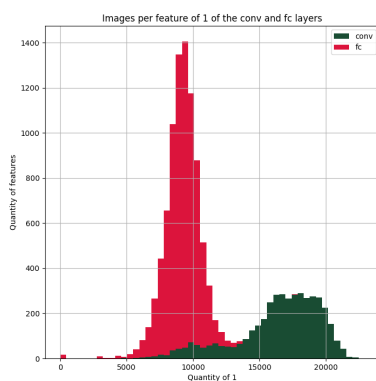
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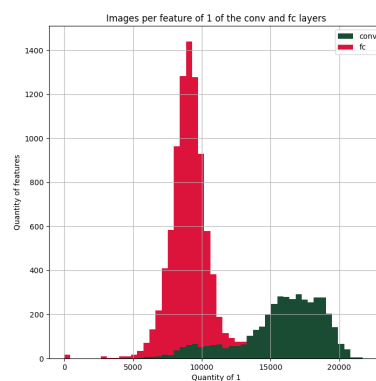
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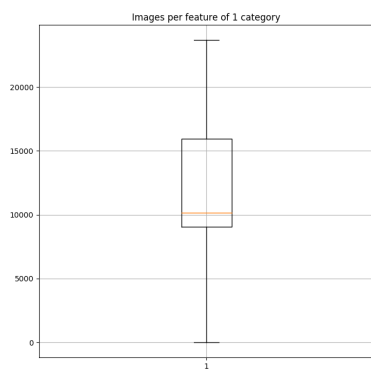
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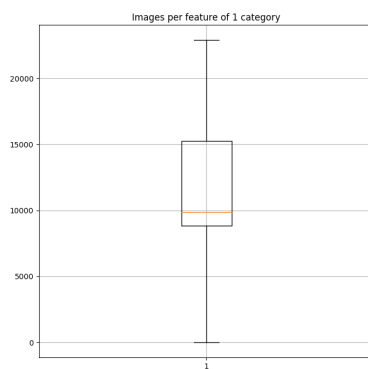
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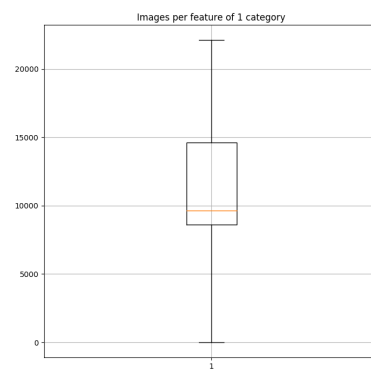
Embedding 31



Embedding 19



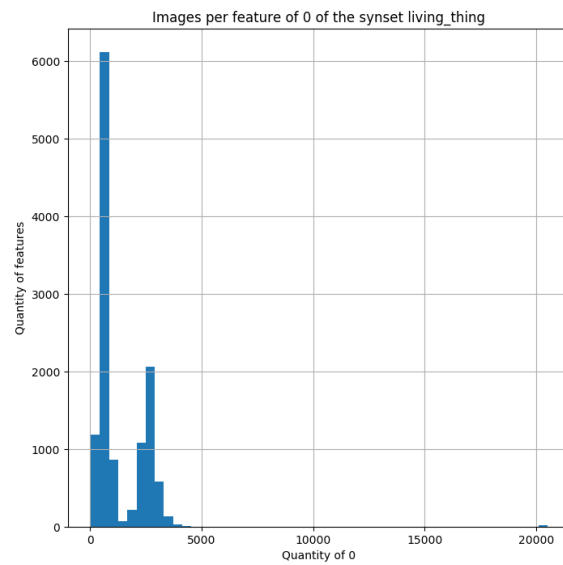
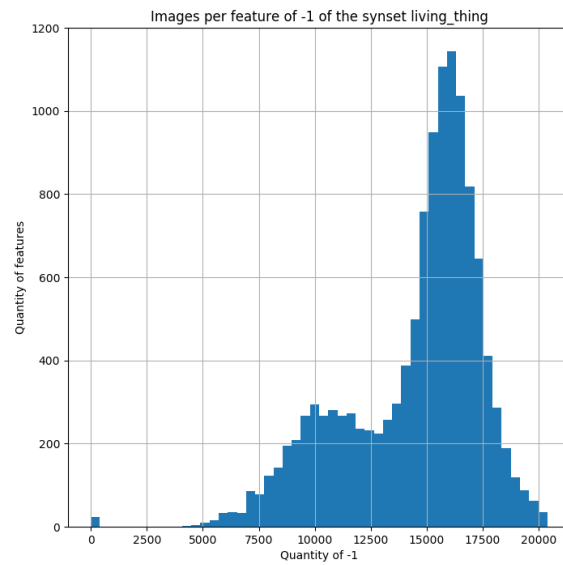
Embedding 25

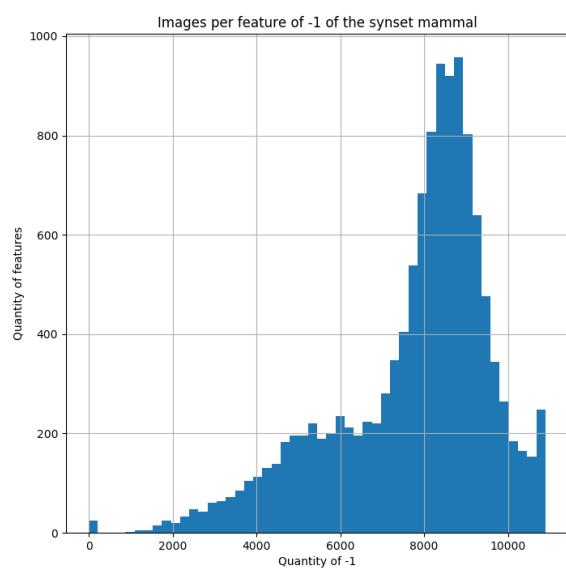
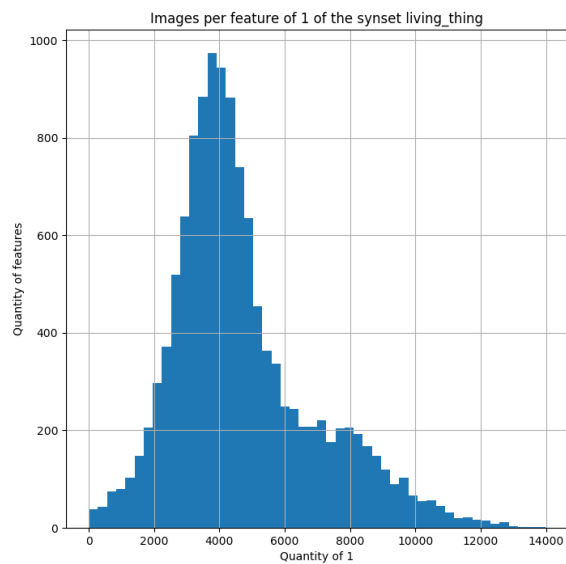


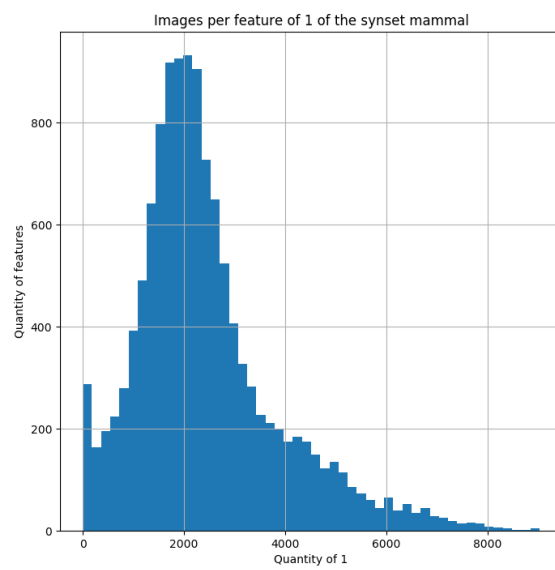
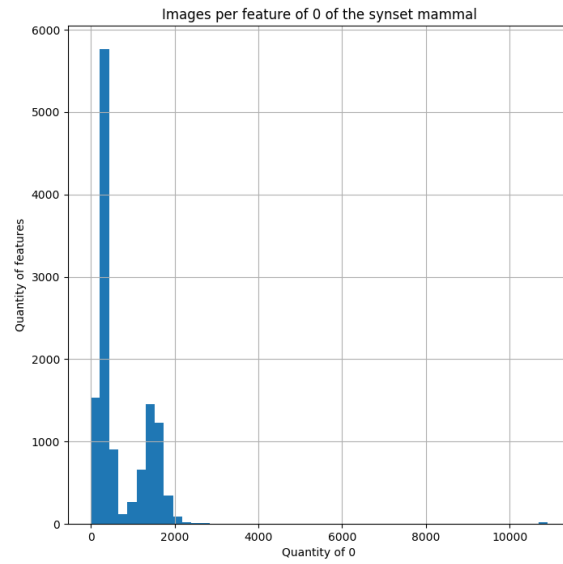
Embedding 31

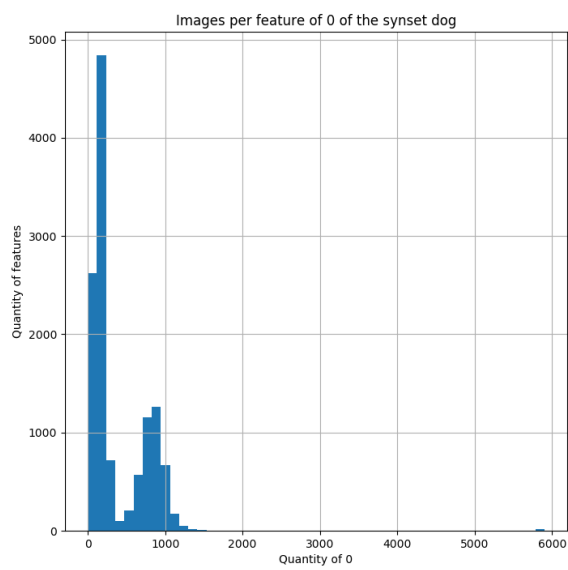
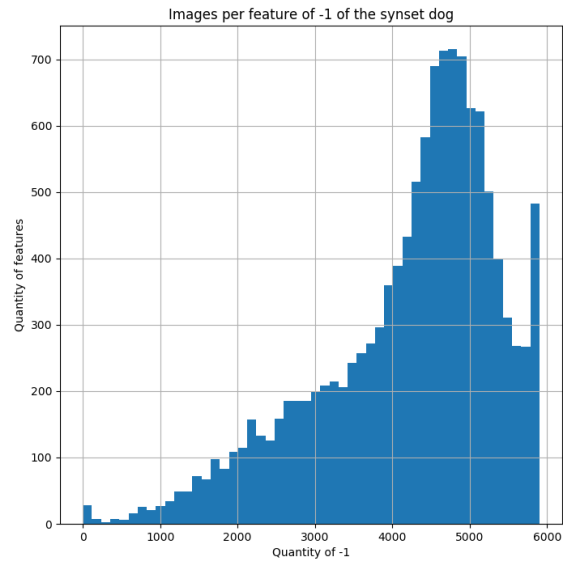


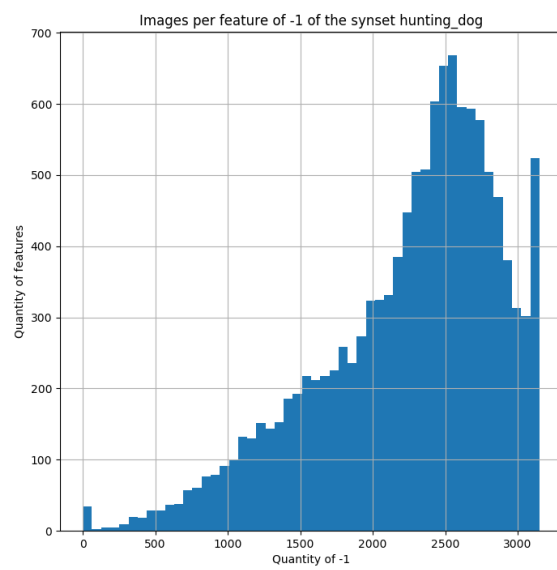
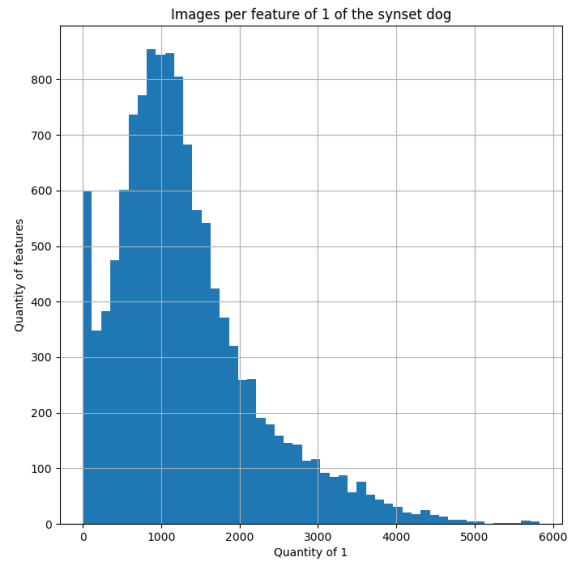
### 3.7 Images per feature per synset

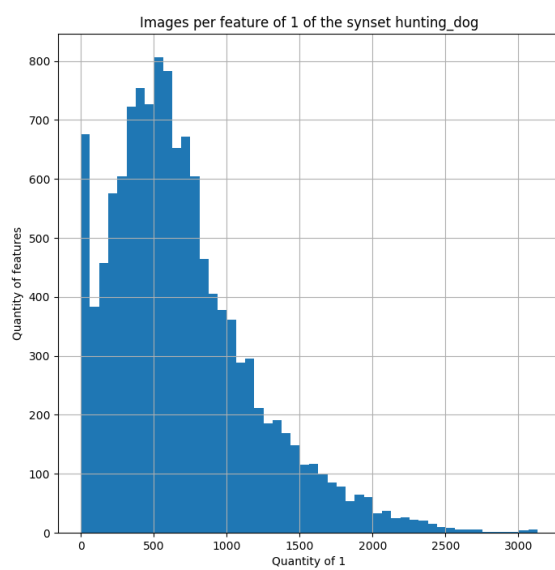
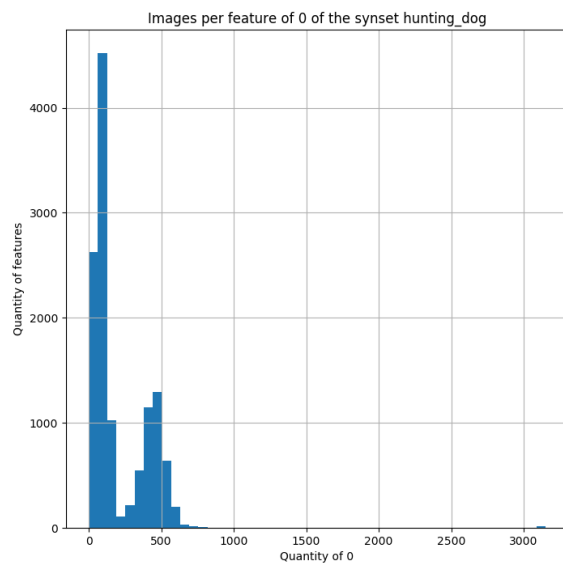












### 3.8 Comprobación de que las cosas tienen sentido

- Hay alguna imagen que no tenga ninguna feature con valor cero? No, ninguna
- Hay algun synset que tenga valor 1 y -1 para la misma feature? Si, bastantes. Estamos tomando:  
La feature tiene el valor i para el synset si lo tiene para alguna imagen del synset(Estamos estudiando la submatriz correspondiente al synset)

### 3.9 Estudio de los outliers de imagenes per feature

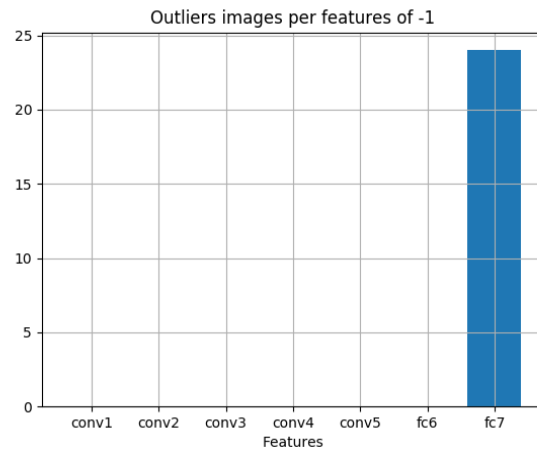


Figure 22: Category: -1

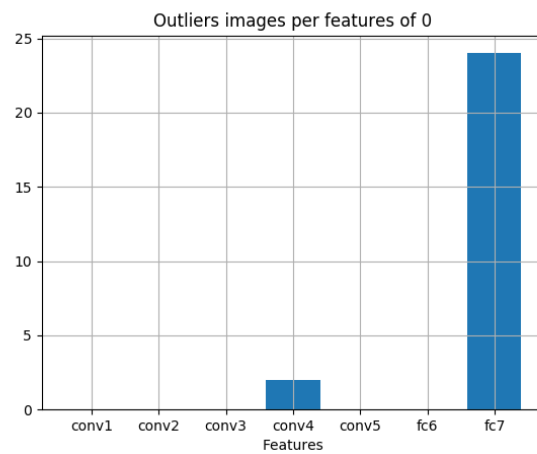


Figure 23: Category: 0

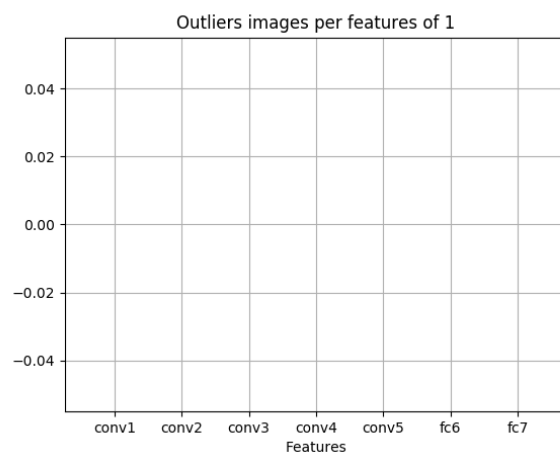


Figure 24: Category: 1