

# unutarnji svijet vizualnih modela

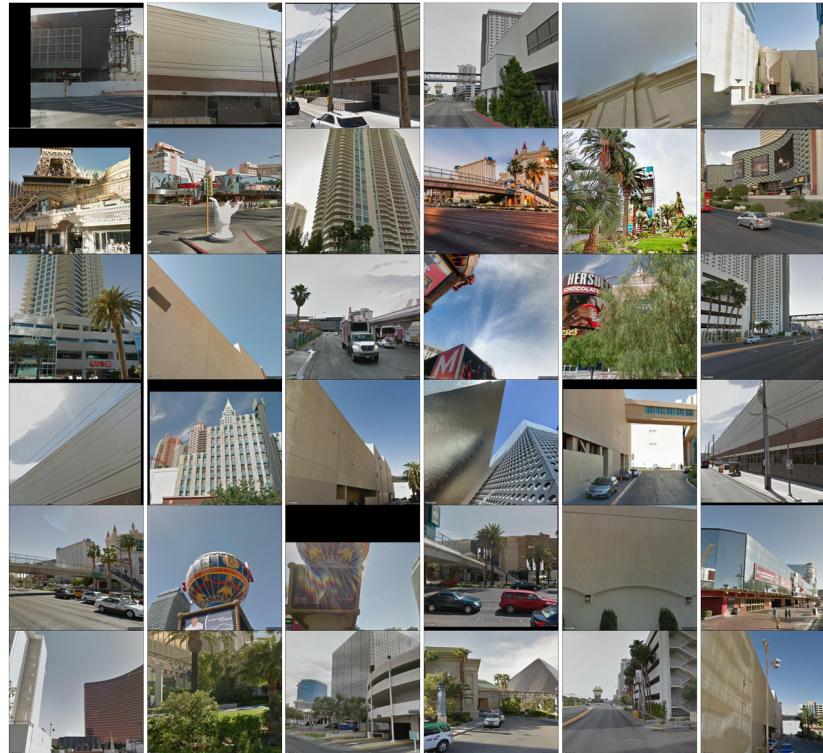
love pešut, megatrend

# struktura

- ovo
- par riječi o podacima, modelima itd.
- vizualizacije neurona
- *circuits*, pregled civilizacijskih rezultata
- atribucija, salijencija—

# dataset

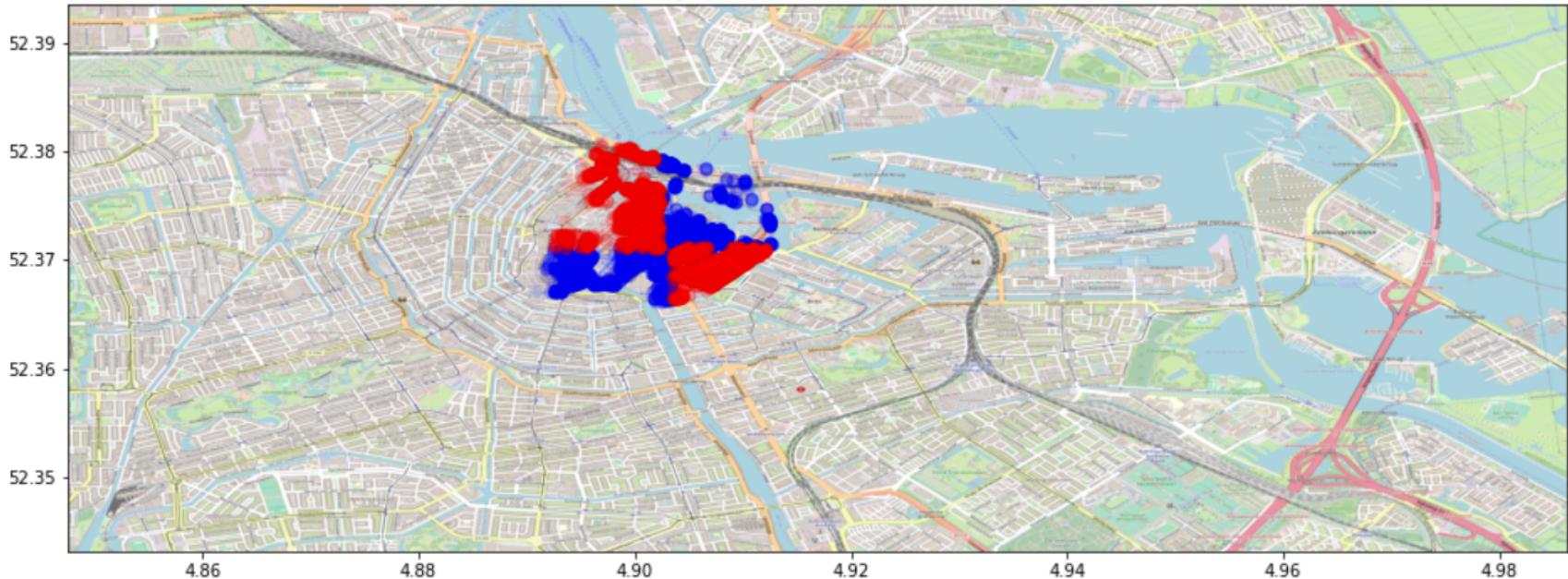
- amsterdam, firenca, las vegas, new york city

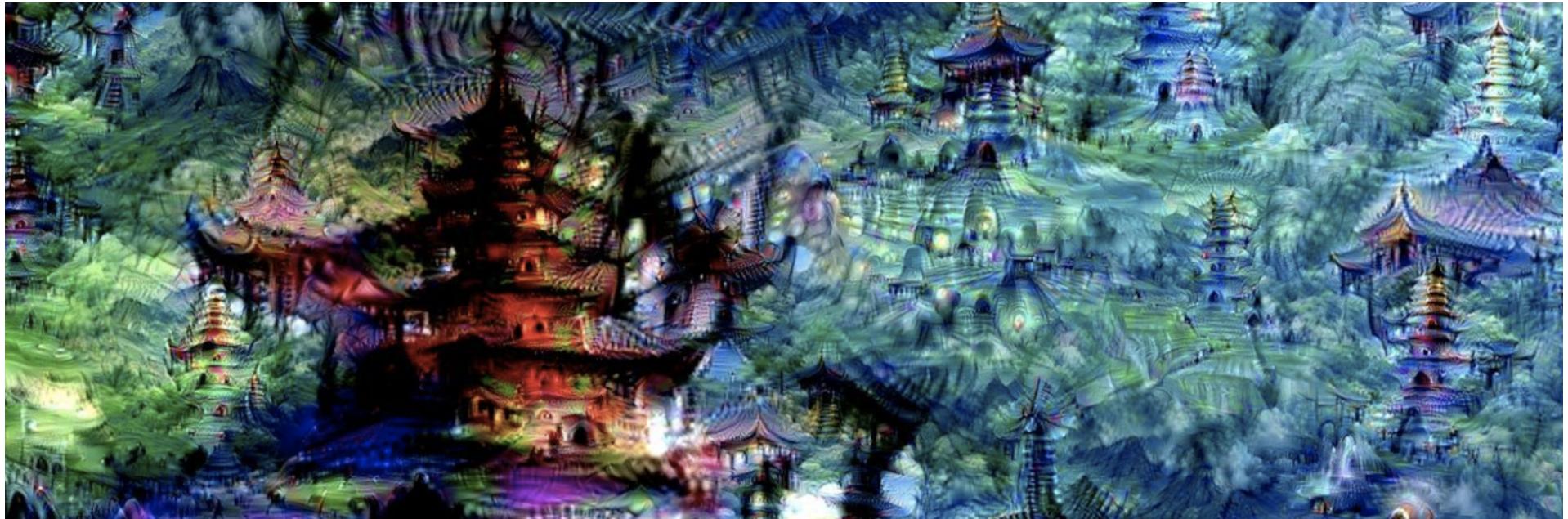


# modelli

- kitty, longcat, inceptionv1

## Plotting Spatial Data on Amsterdam Map





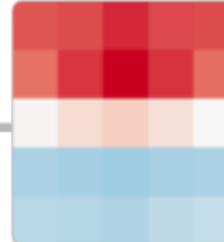
- društvo kada bi svi sejvali notebooke (i) u htmlu:



# circuits: tvrdnje

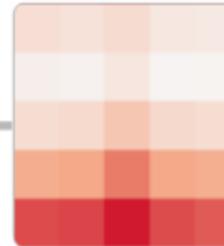
- tvrdnja 1: neuronske mreže se sastoje od značajki
- tvrdnja 2: značajke su povezane težinama, i tvore circuitse
- tvrdnja 3: analogne značajke i circuitsi se formiraju kroz razne mreže i podatke

**Windows** (4b:237) excite the car detector at the top and inhibit at the bottom.

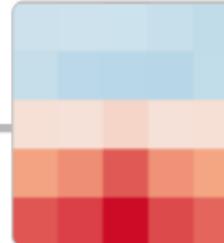


- positive (excitation)
- negative (inhibition)

**Car Body** (4b:491) excites the car detector, especially at the bottom.



**Wheels** (4b:373) excite the car detector at the bottom and inhibit at the top.



A **car detector** (4c:447) is assembled from earlier units.

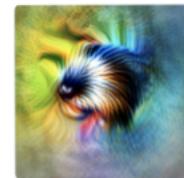
InceptionV1 has a **left-oriented** pathway detecting dogs facing left...

... and a symmetric **right-oriented** pathway detecting dogs facing right. At each step, the two pathways **inhibit** each other and **excite** the next stage.

Oriented Fur (3b)



Oriented Heads (4a)



Union over  
left and right  
cases.

Union over  
left and right  
cases.

Orientation-Invariant Head (4b)



Orientation-Invariant Head+Neck (4c)



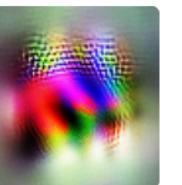
## Curve detectors

ALEXNET

Krizhevsky et al. [34]

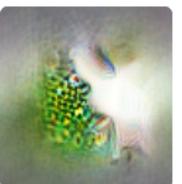
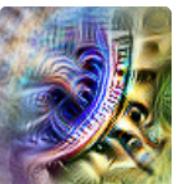
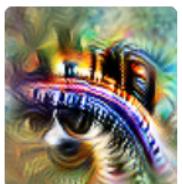


## High-Low Frequency detectors



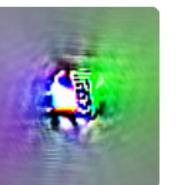
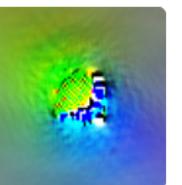
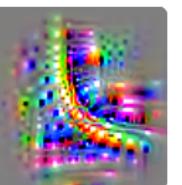
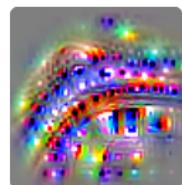
INCEPTIONV1

Szegedy et al. [26]



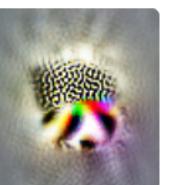
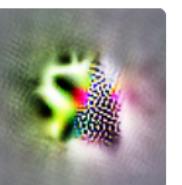
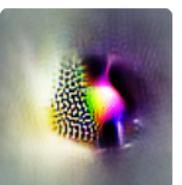
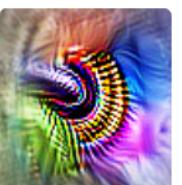
VGG19

Simonyan et al. [35]



RESNETV2-50

He et al. [36]



# hvala

- interpretabilnost — civilizacijski važna?!
- za bivanje funded radeći na interpretabilityju,  
[lovre.pesut@gmail.com](mailto:lovre.pesut@gmail.com)
- za puno zabavnog rada na vizualnim modelima  
[zvonimir.cikojevic@megatrend.com](mailto:zvonimir.cikojevic@megatrend.com)