

# Giulia D'Angelo



Low power consumption

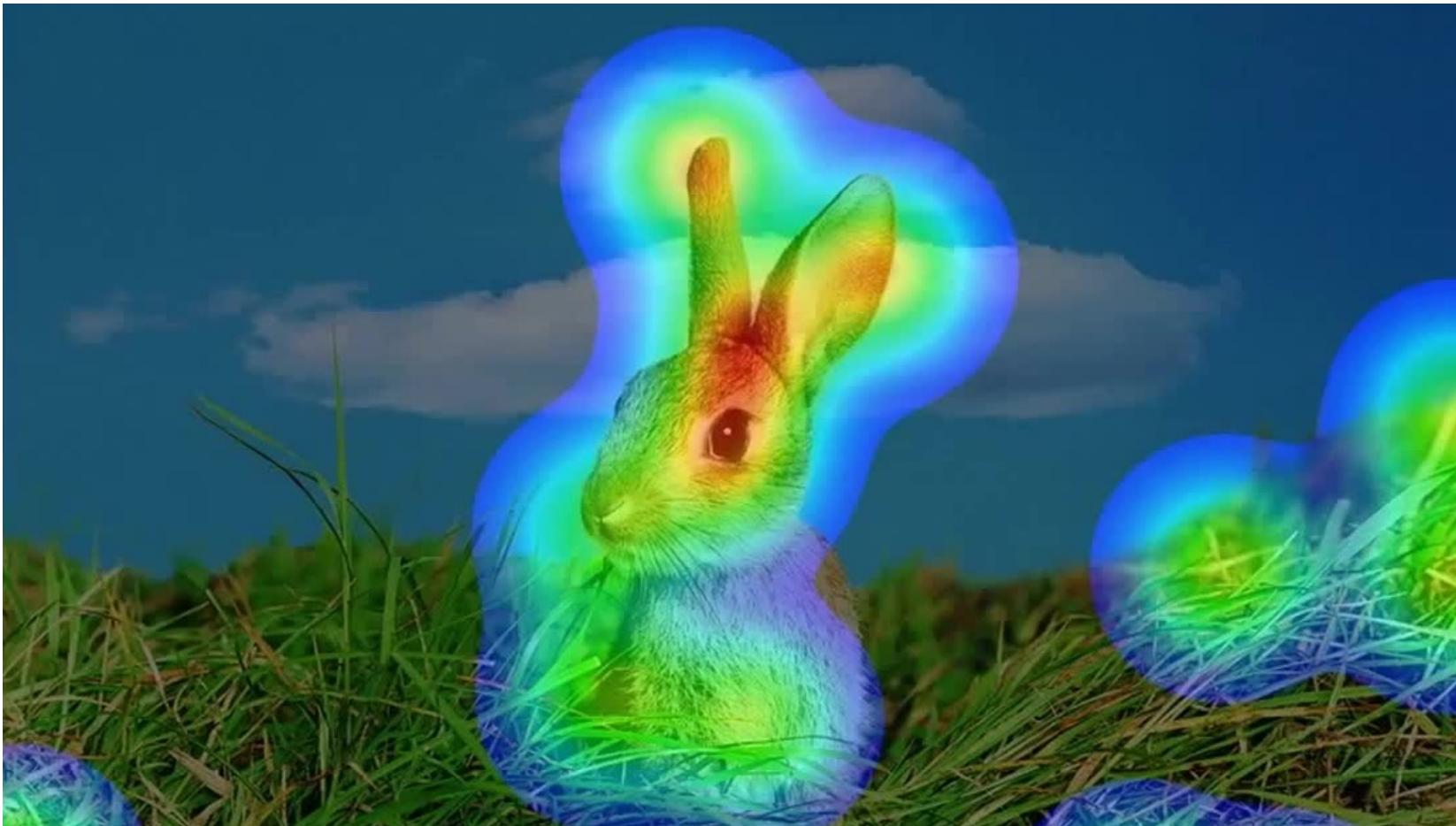
# What attracts your attention?

Unconstrained environment

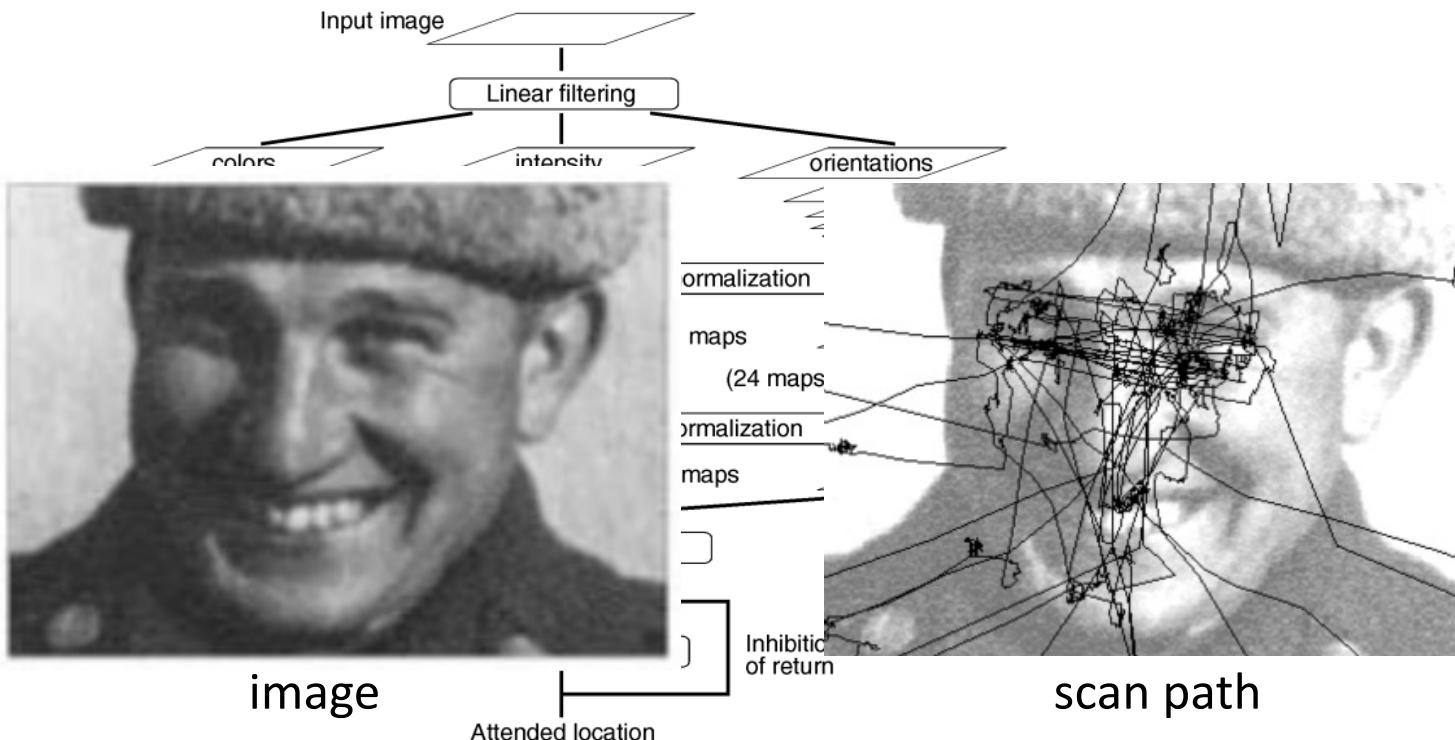
Low latency



# saliency map What attracts your attention?

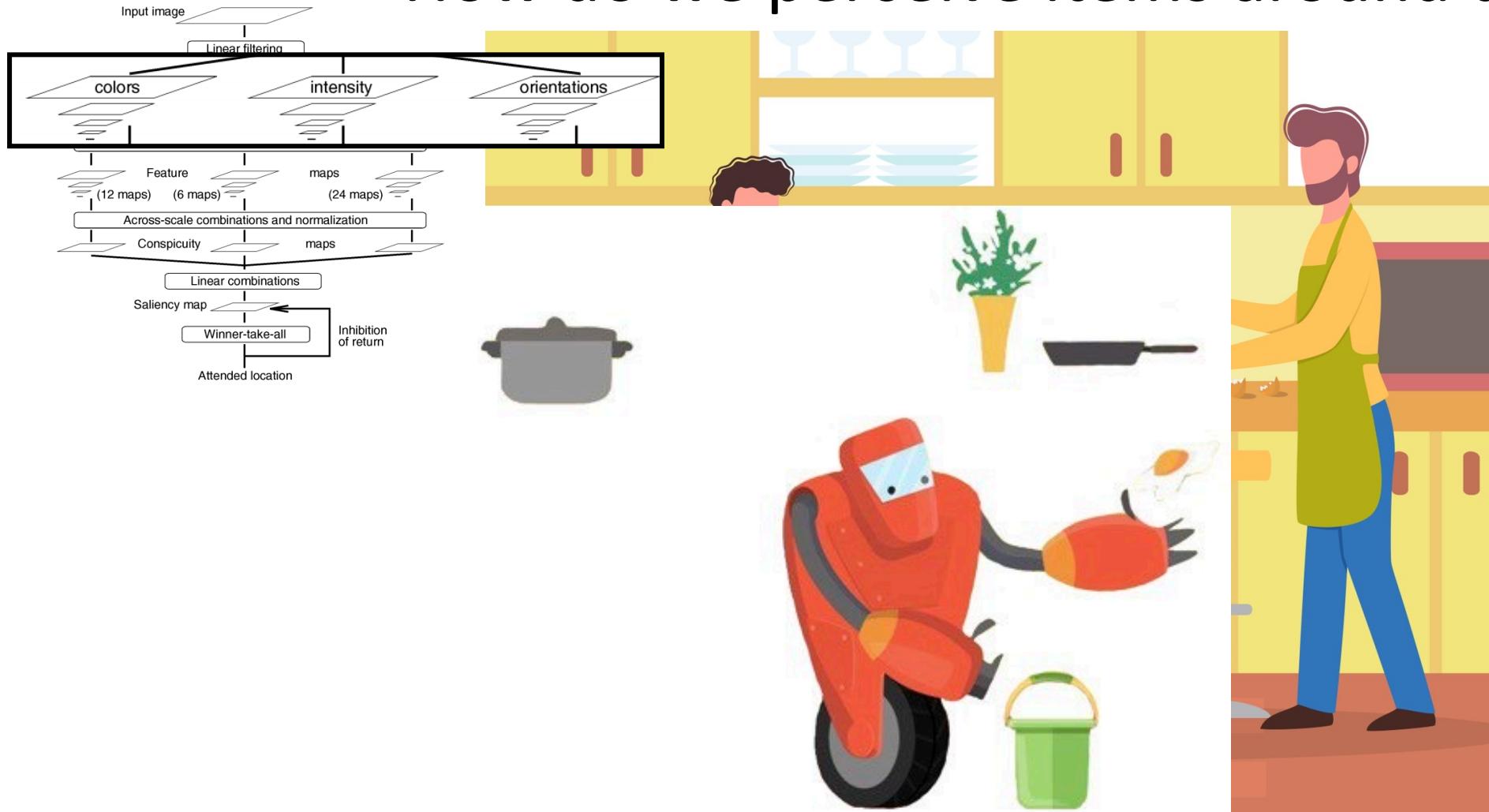


# What is a saliency map ?

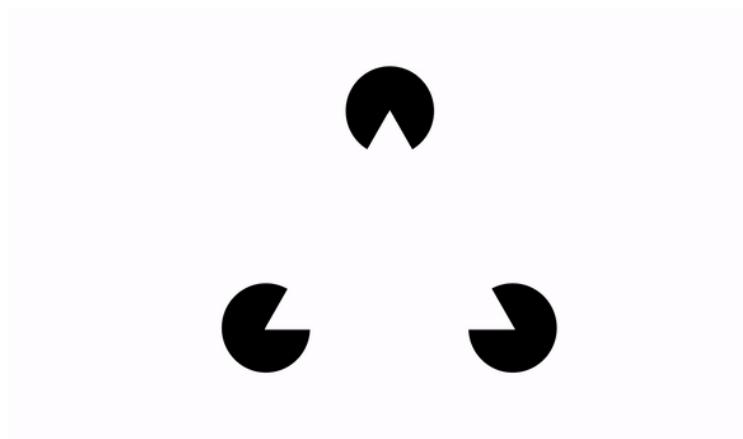


Itti, Laurent, Christof Koch, and Ernst Niebur. "A model of saliency-based visual attention for rapid scene analysis." *IEEE Transactions on Pattern Analysis & Machine Intelligence* 20, no. 11 (1998): 1254-1259.

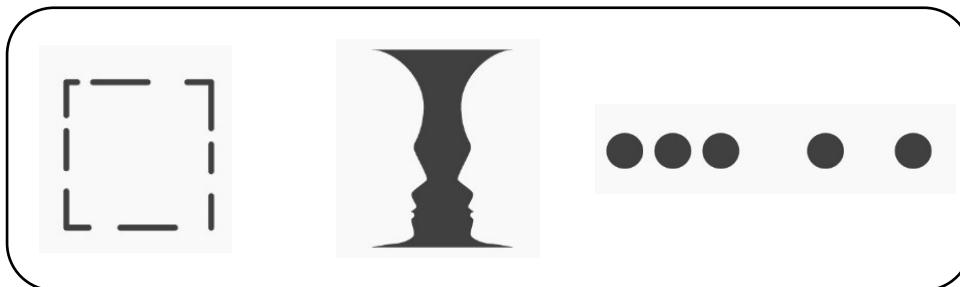
# How do we perceive items around us?



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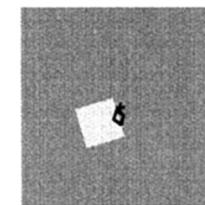
Gestalt principles



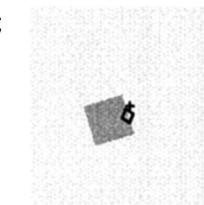
# How do we perceive items around us?

Cell 13id4 (V2)

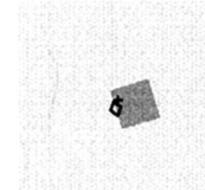
A



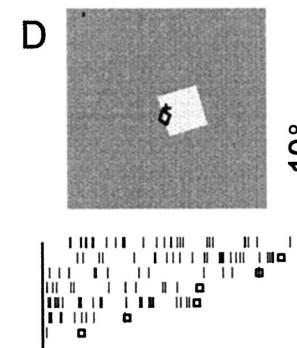
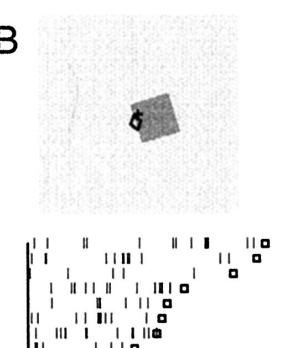
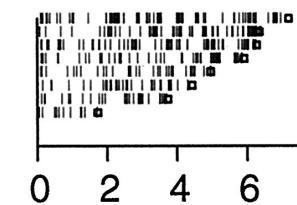
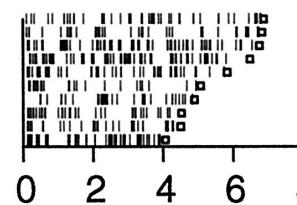
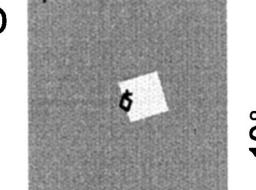
C



B



D

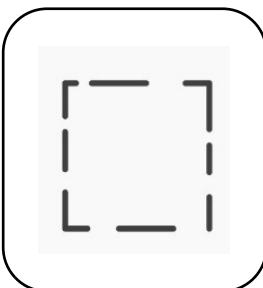


Time (sec.)

Time (sec.)

**Border  
Ownership  
cells**

continuity

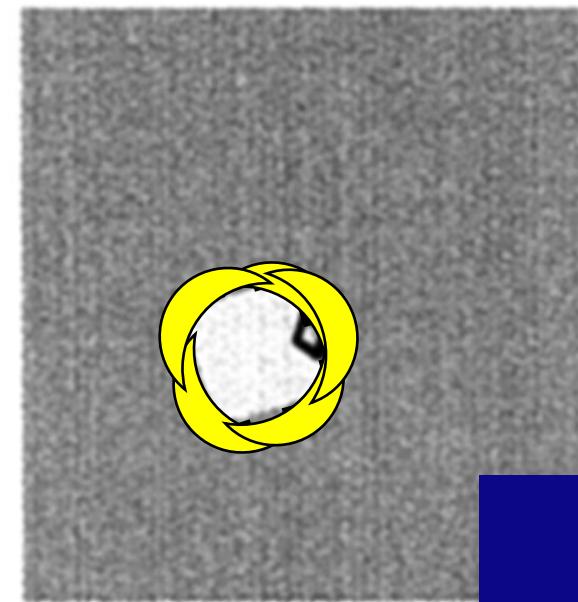


Zhou, Hong, Howard S. Friedman, and Rüdiger Von Der Heydt.  
"Coding of border ownership in monkey visual cortex." *Journal of Neuroscience* 20.17 (2000): 6594-6611.

# How do we perceive items around us?

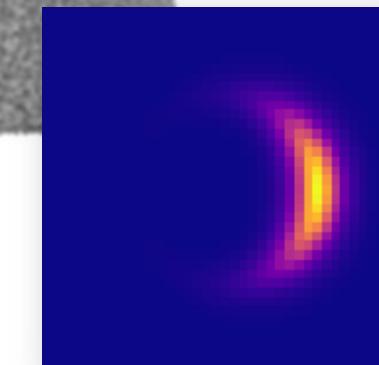
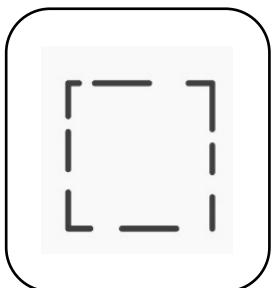
## Cell 13id4 (V2)

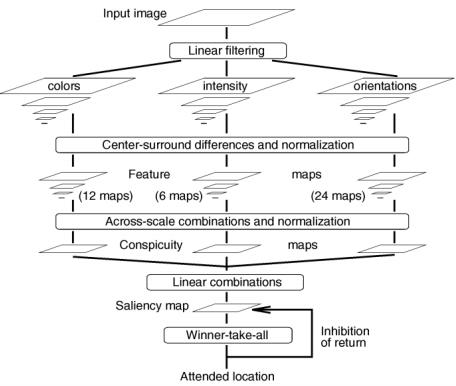
A



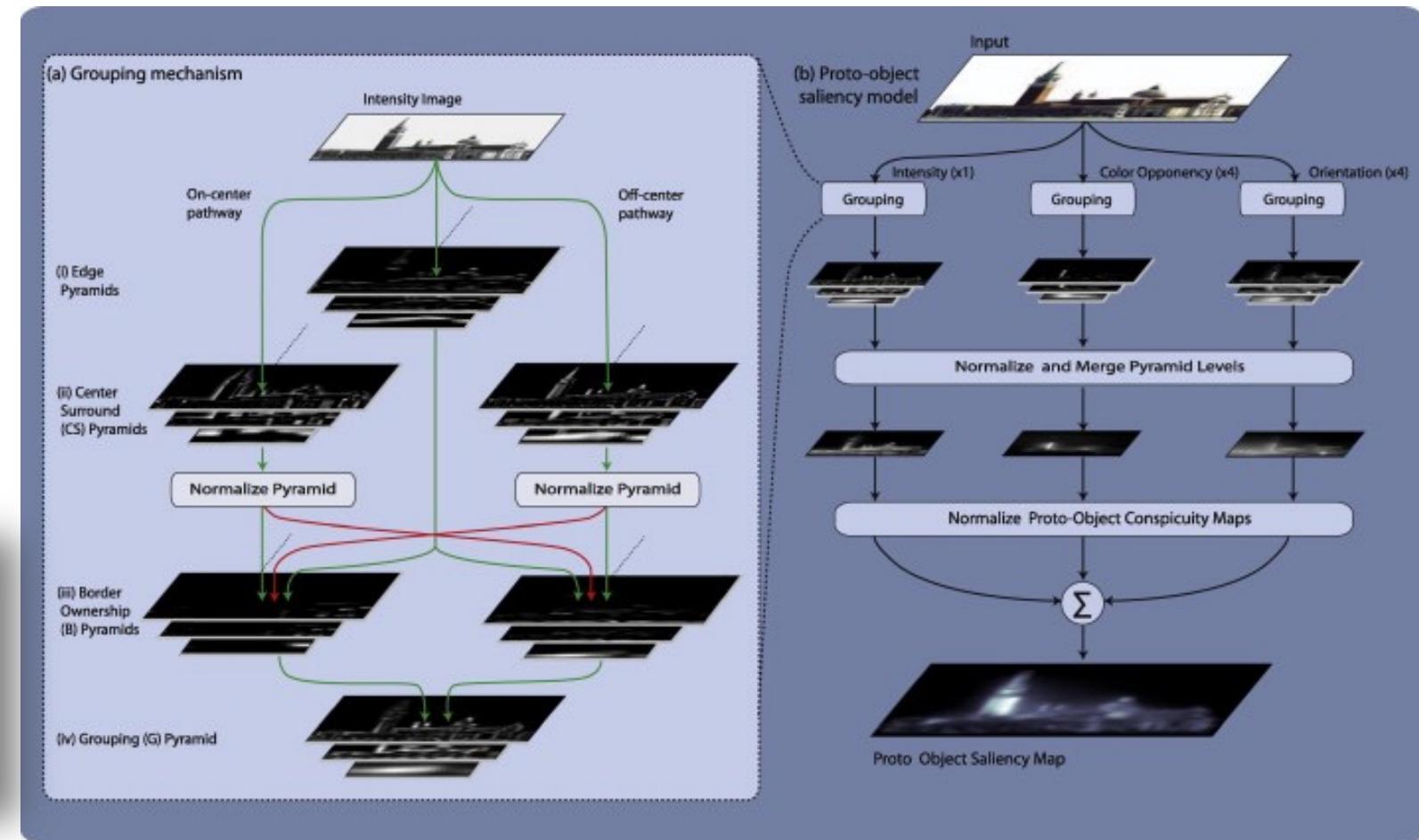
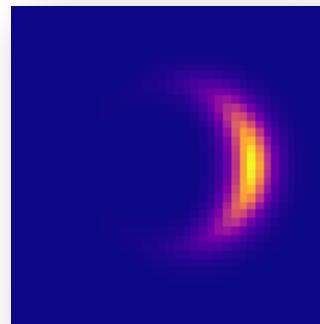
Border  
Ownership  
cells

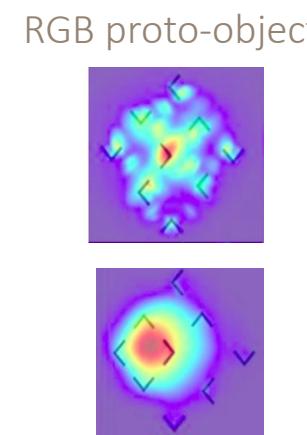
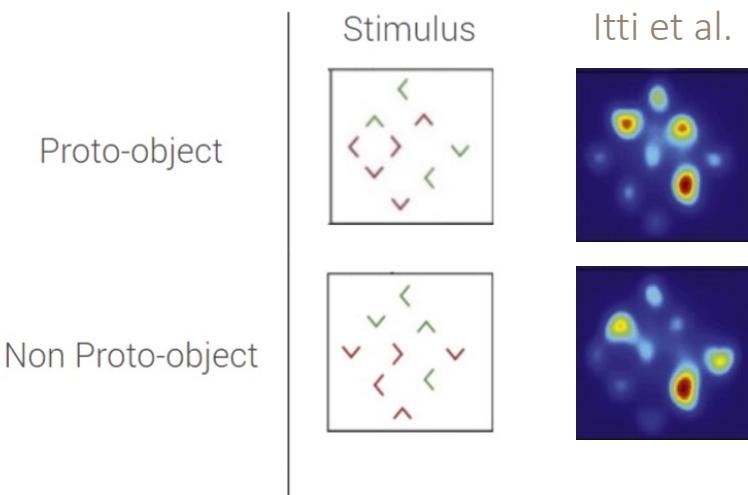
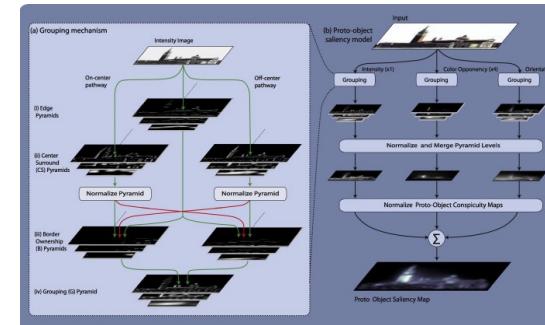
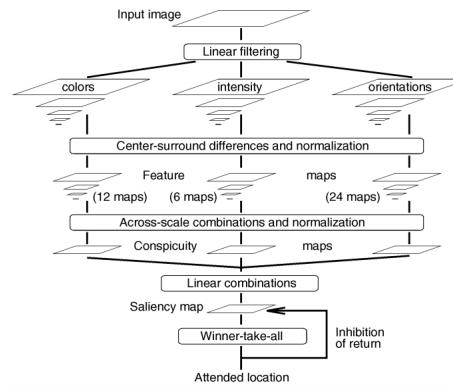
continuity

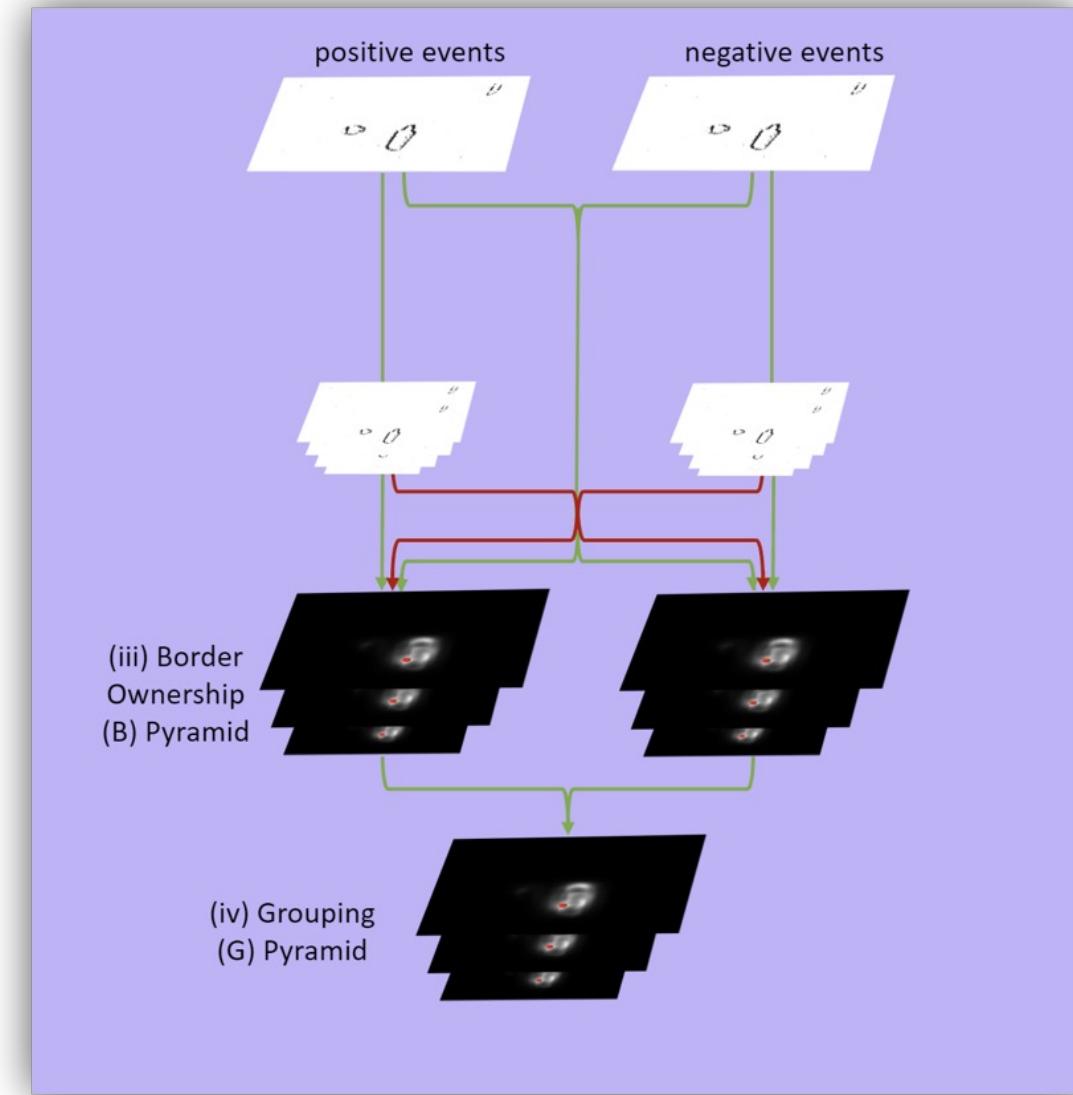
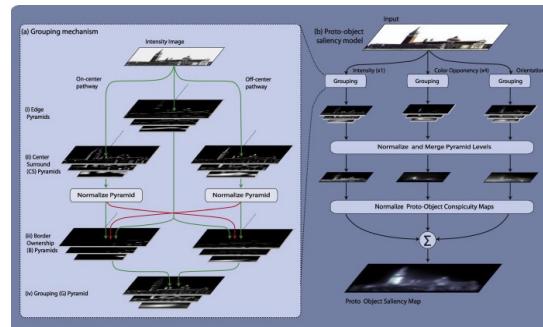
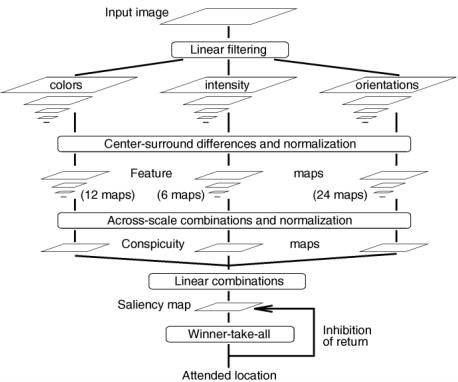


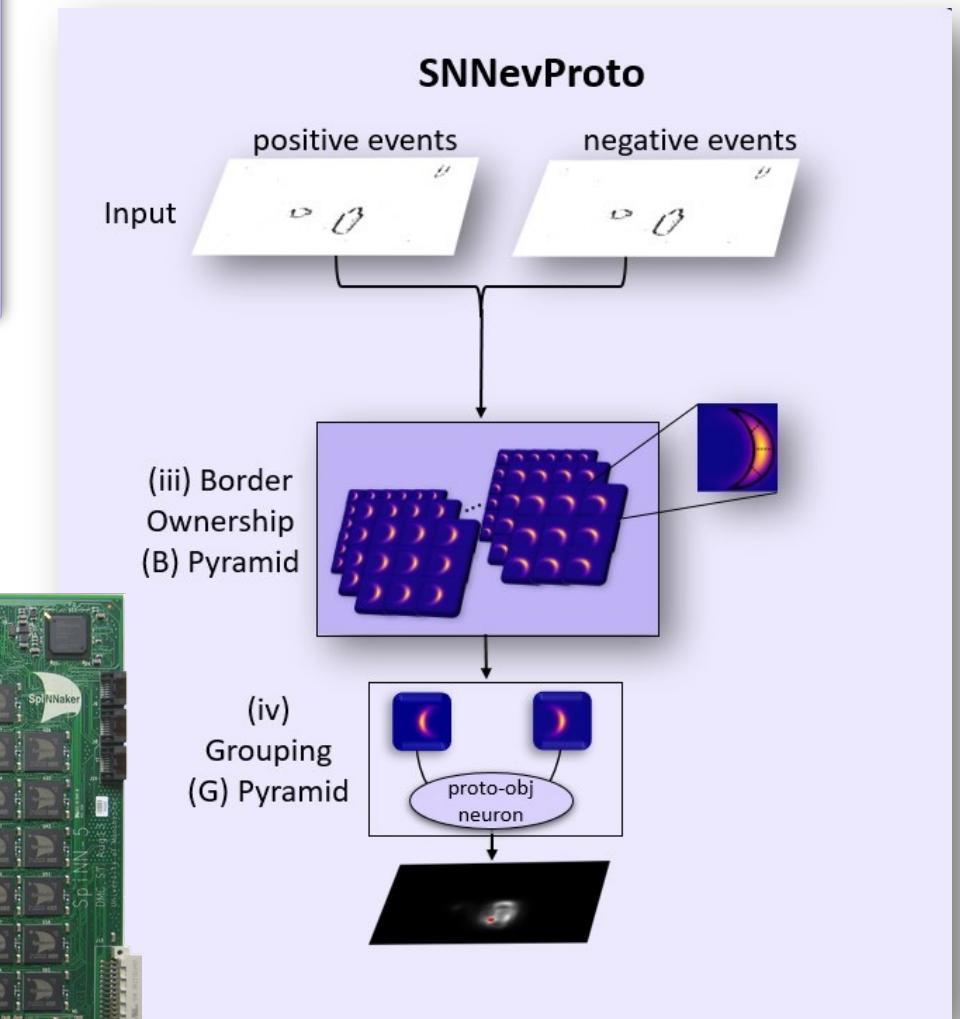
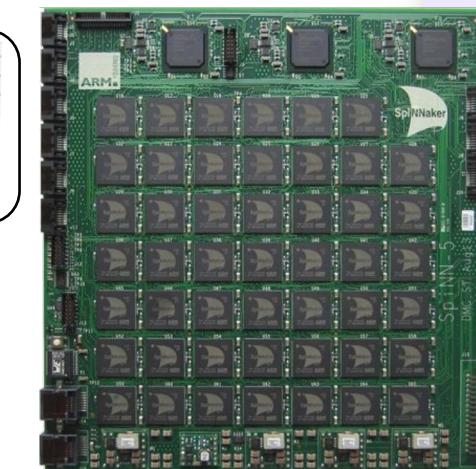
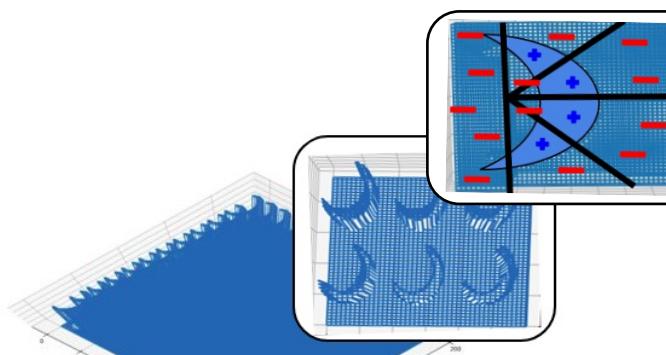
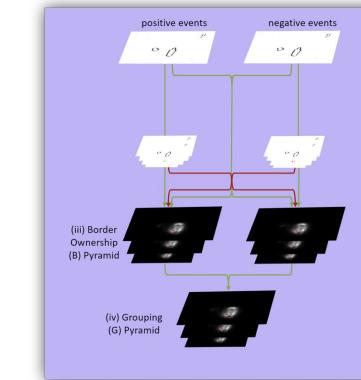
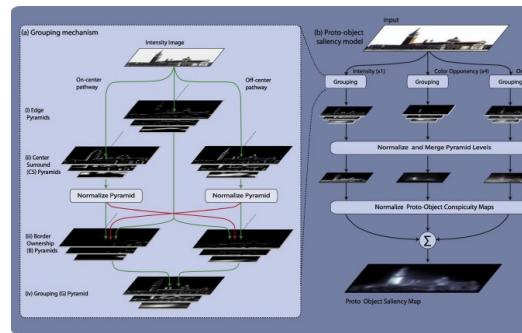
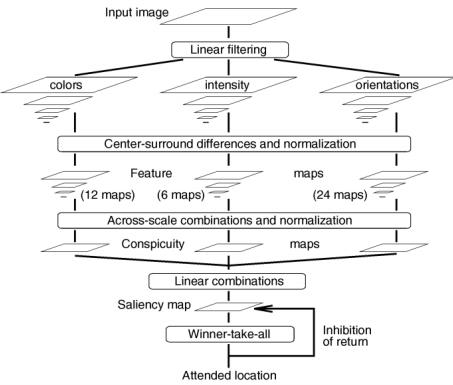


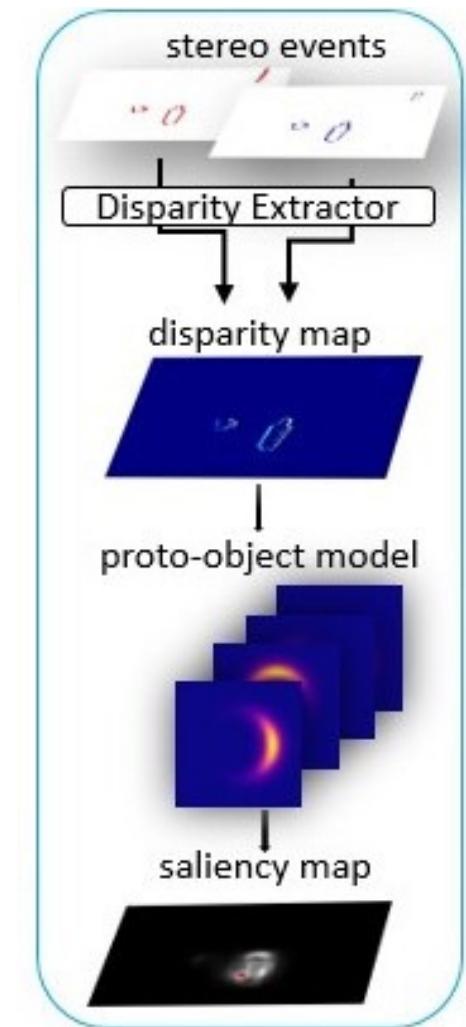
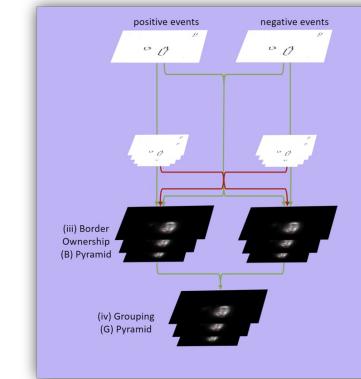
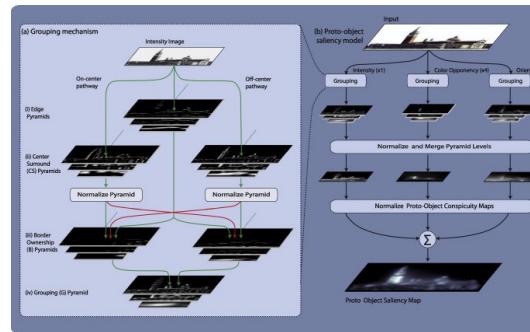
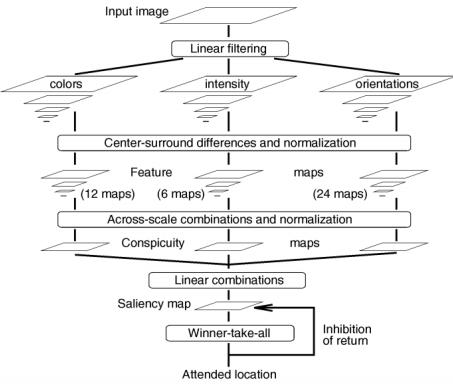
Von Mises filter

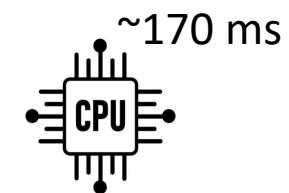
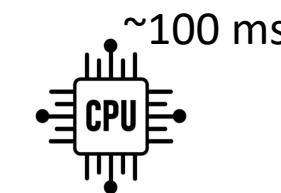
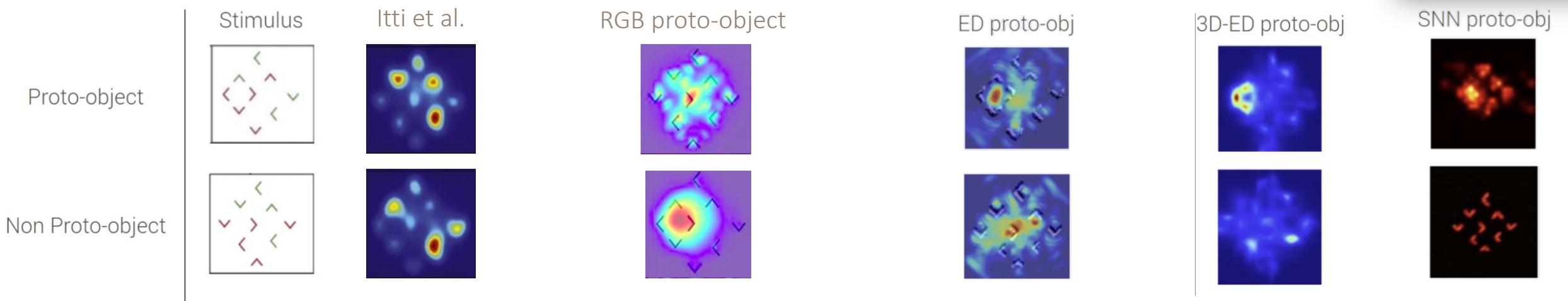
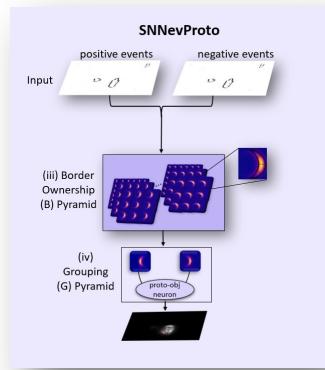
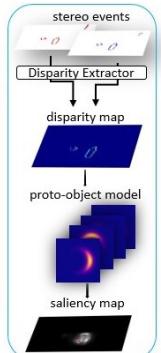
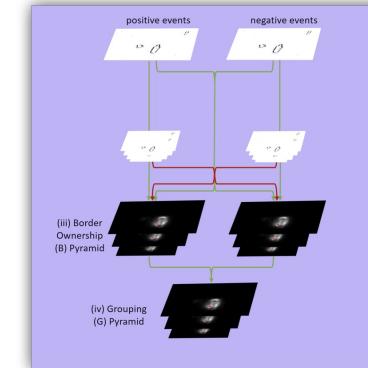
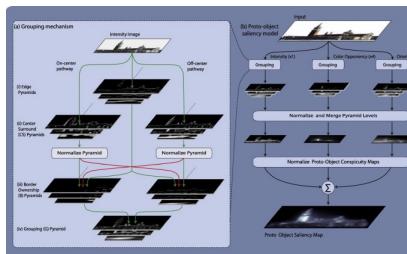
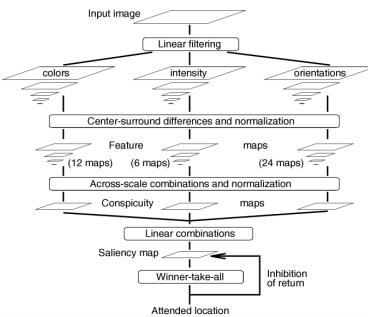




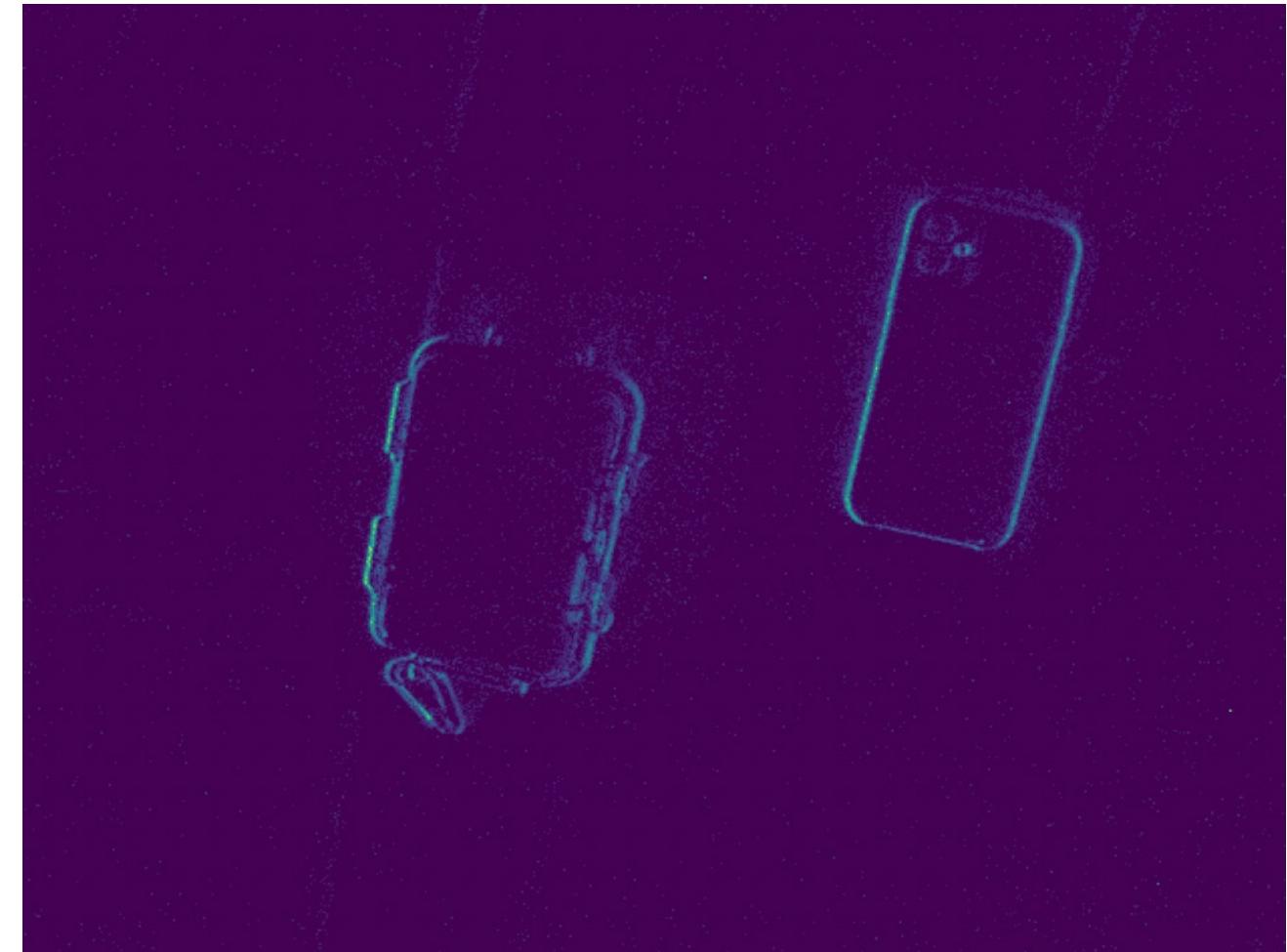


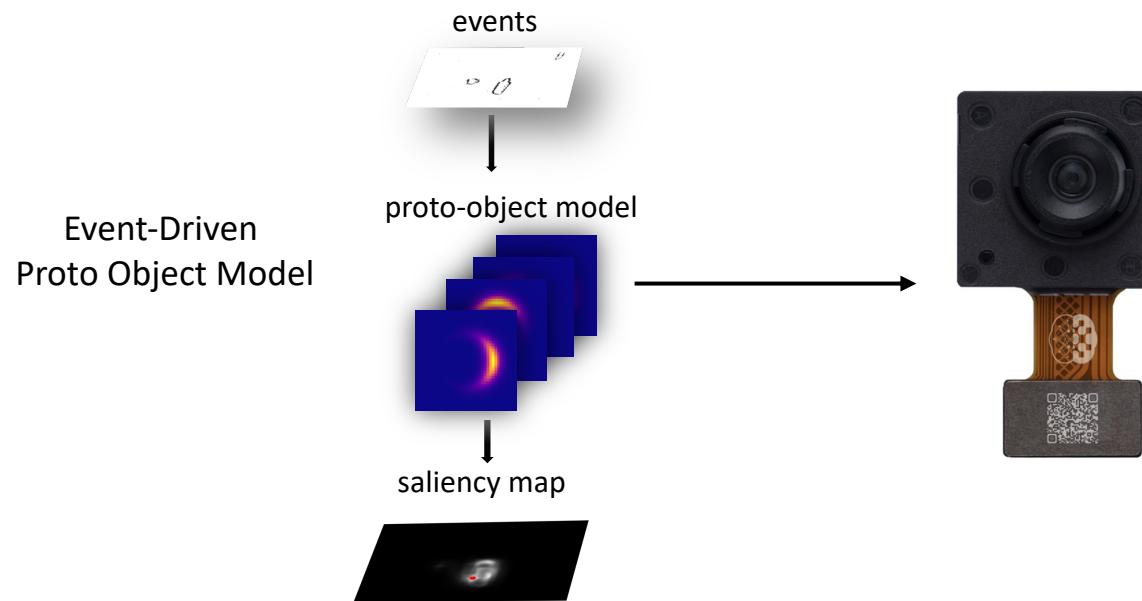


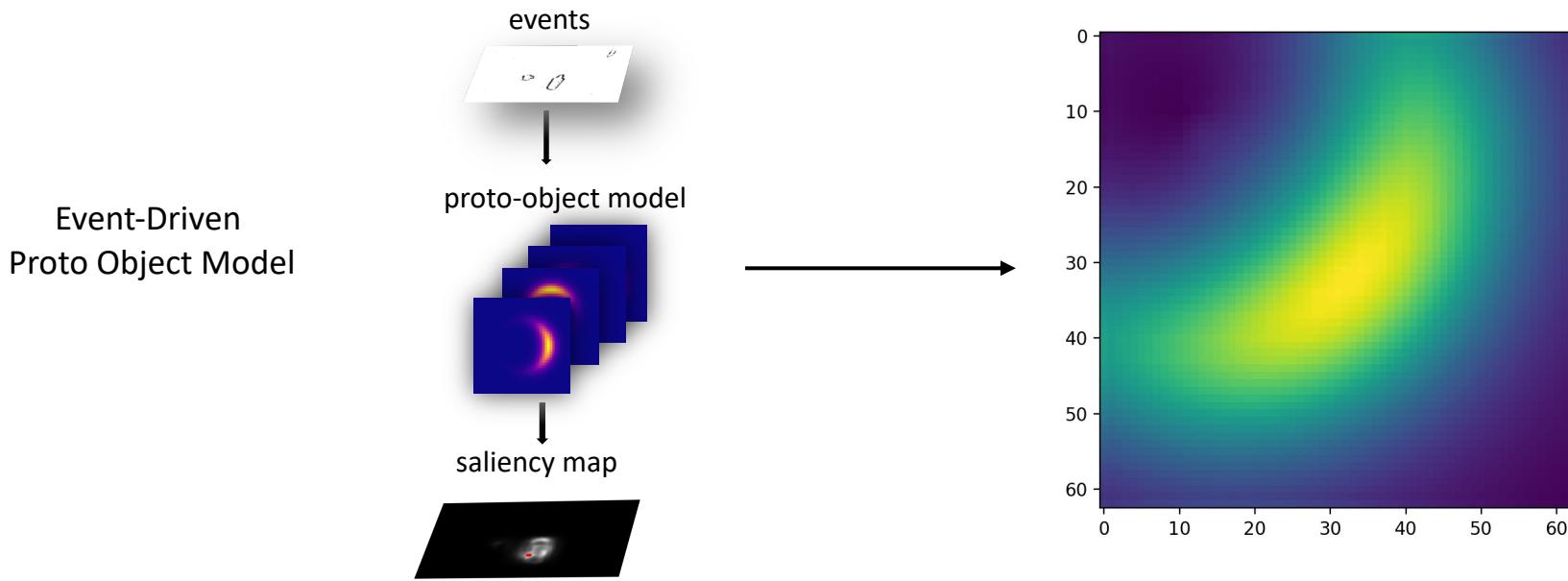


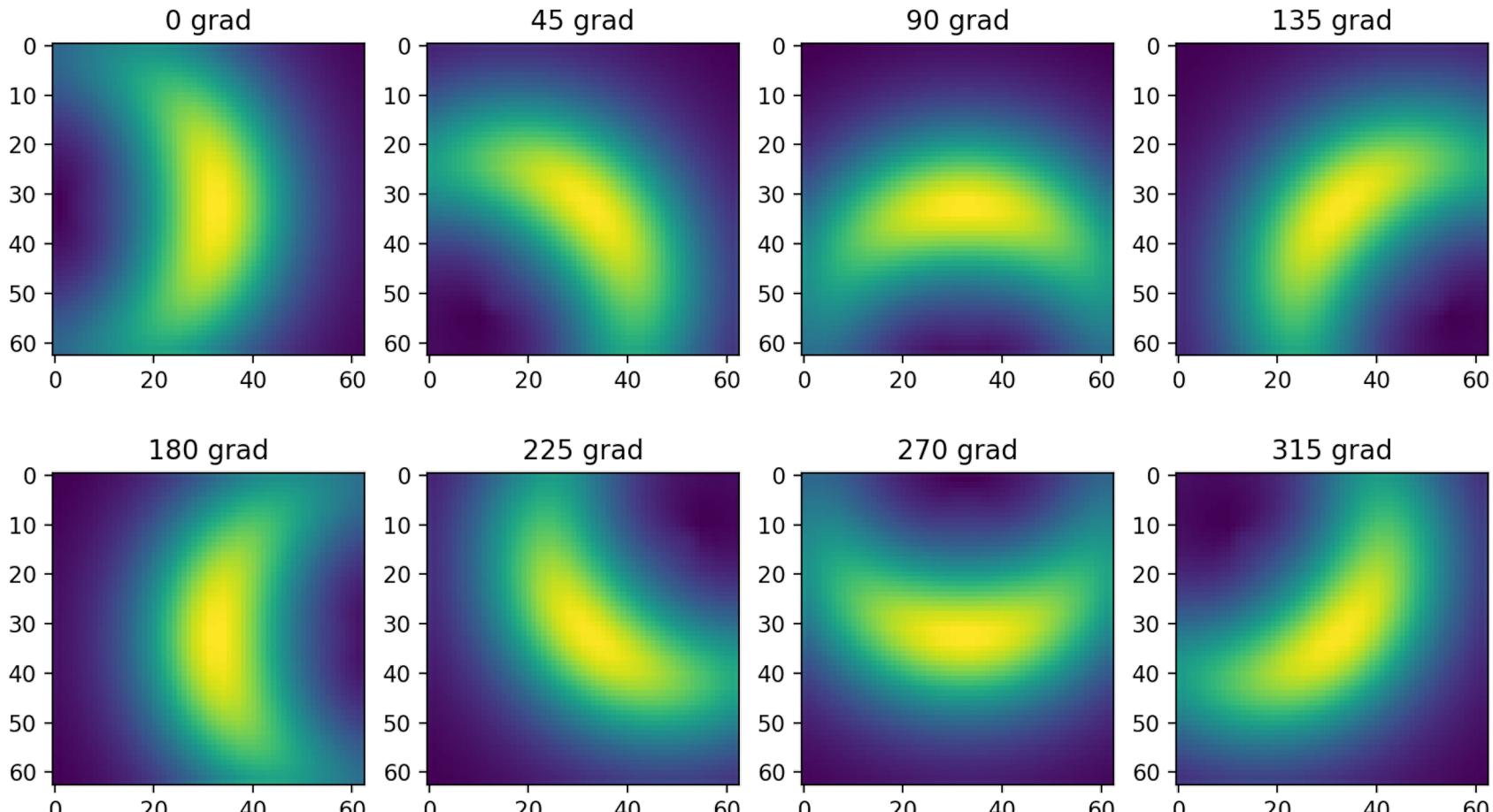


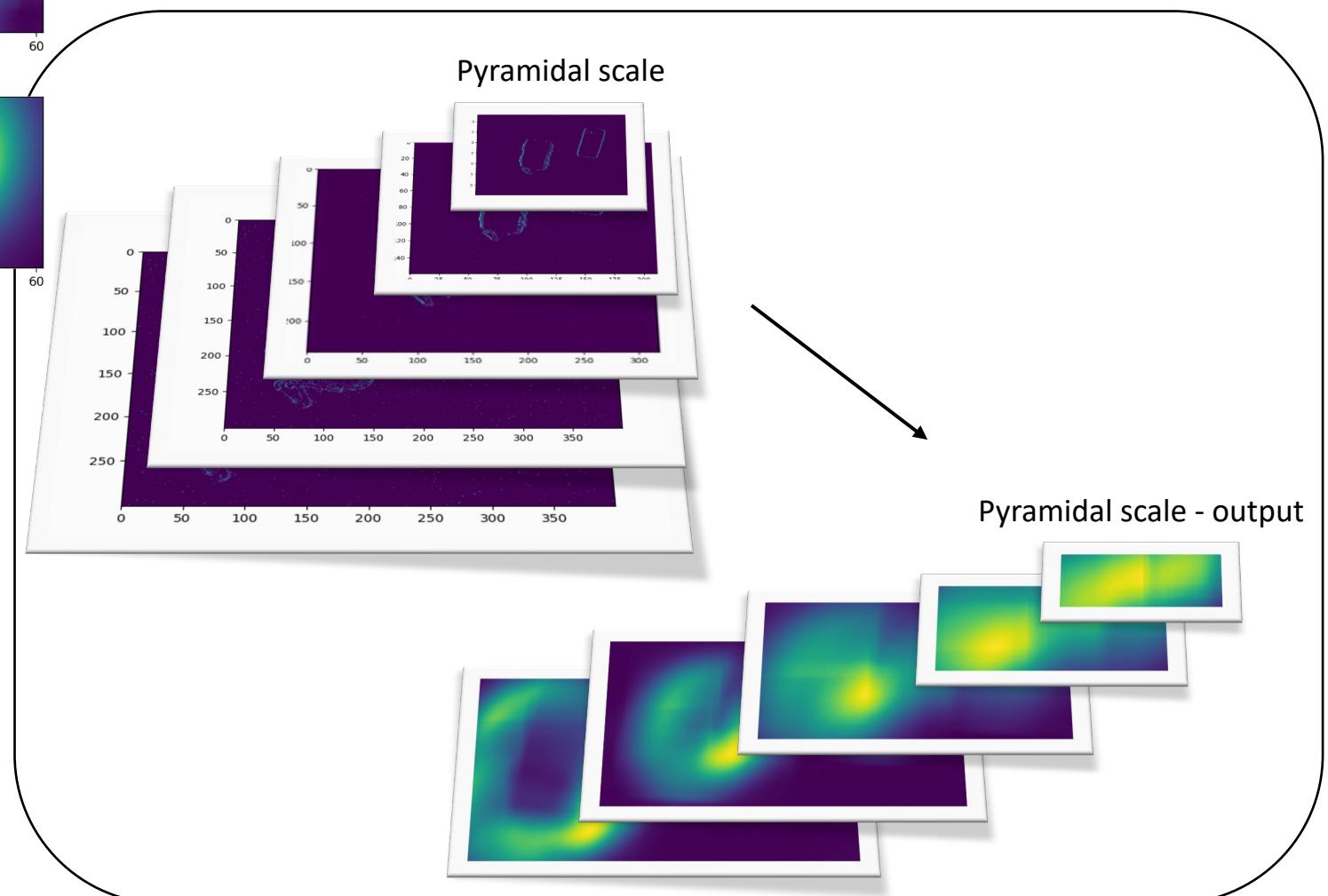
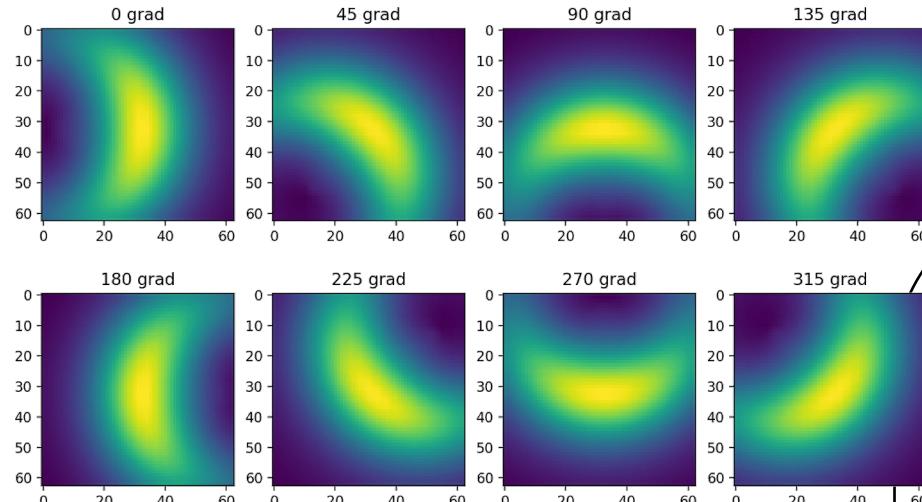
# The CapoCaccia Workshops toward Neuromorphic Intelligence

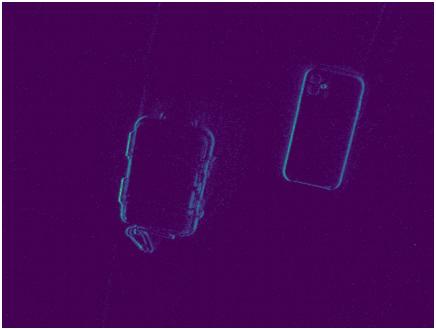




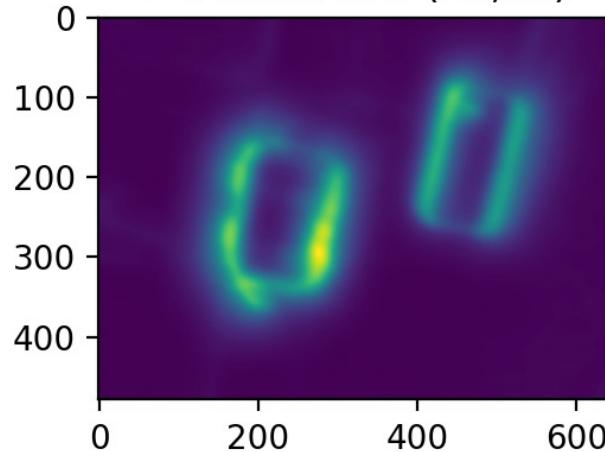




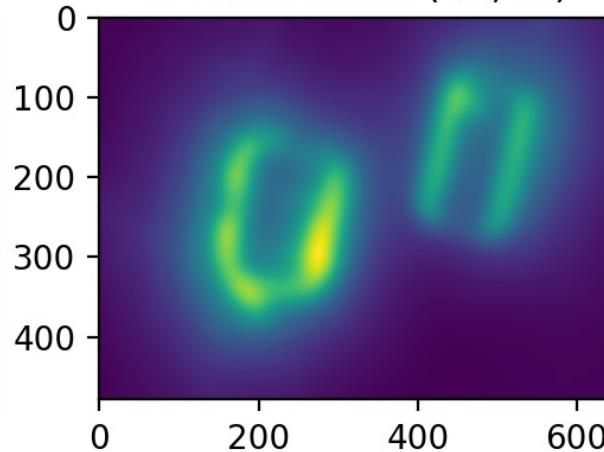




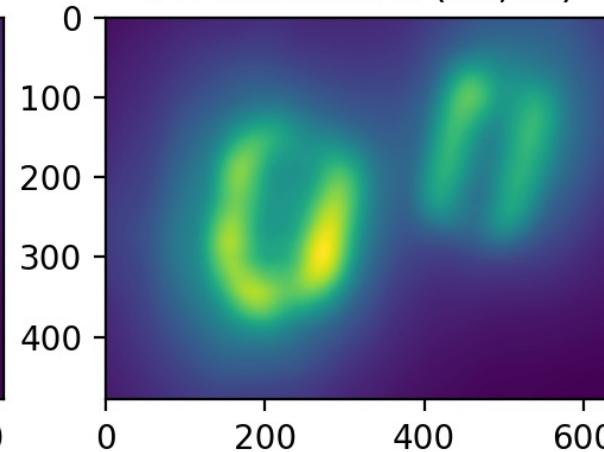
VM filters size (21,21)



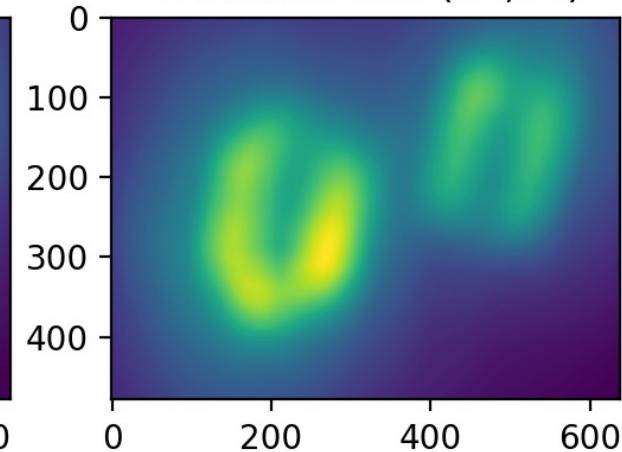
VM filters size (42,42)

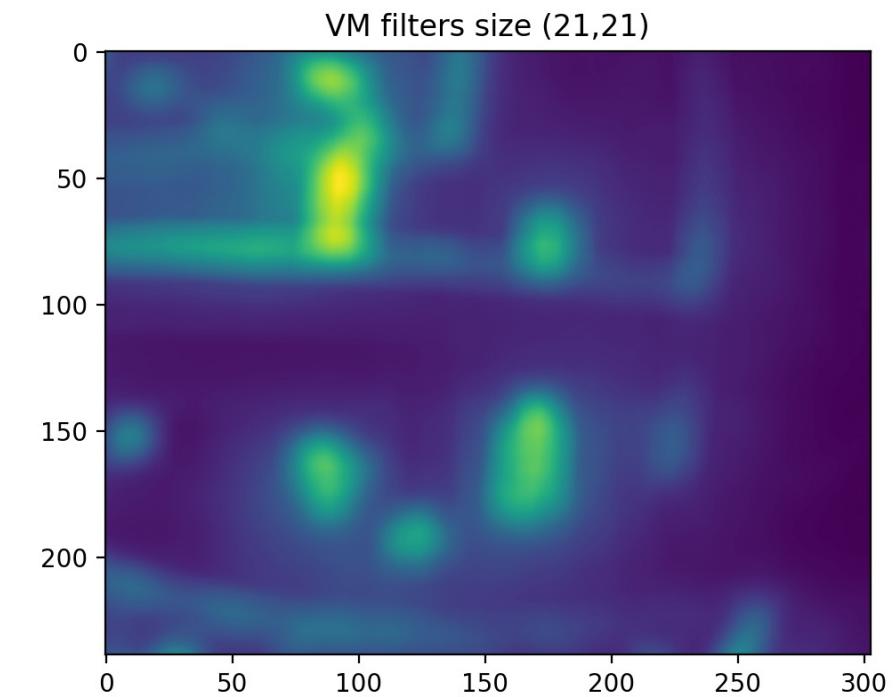
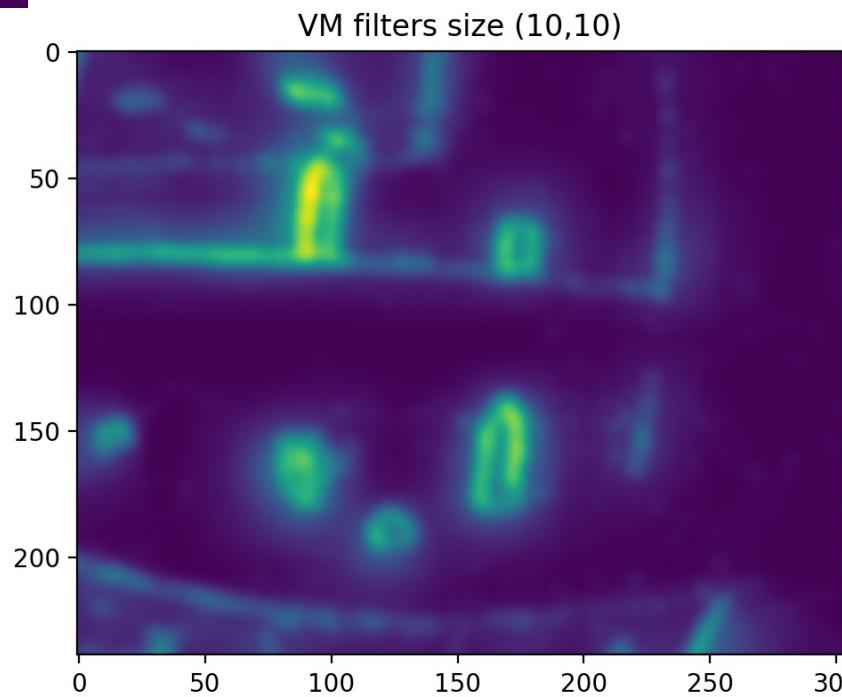
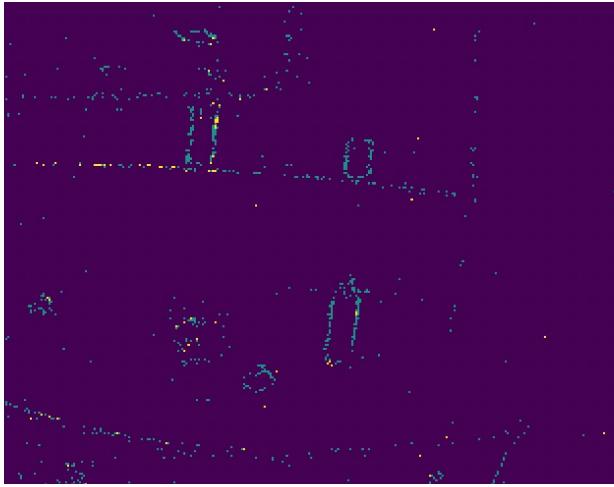


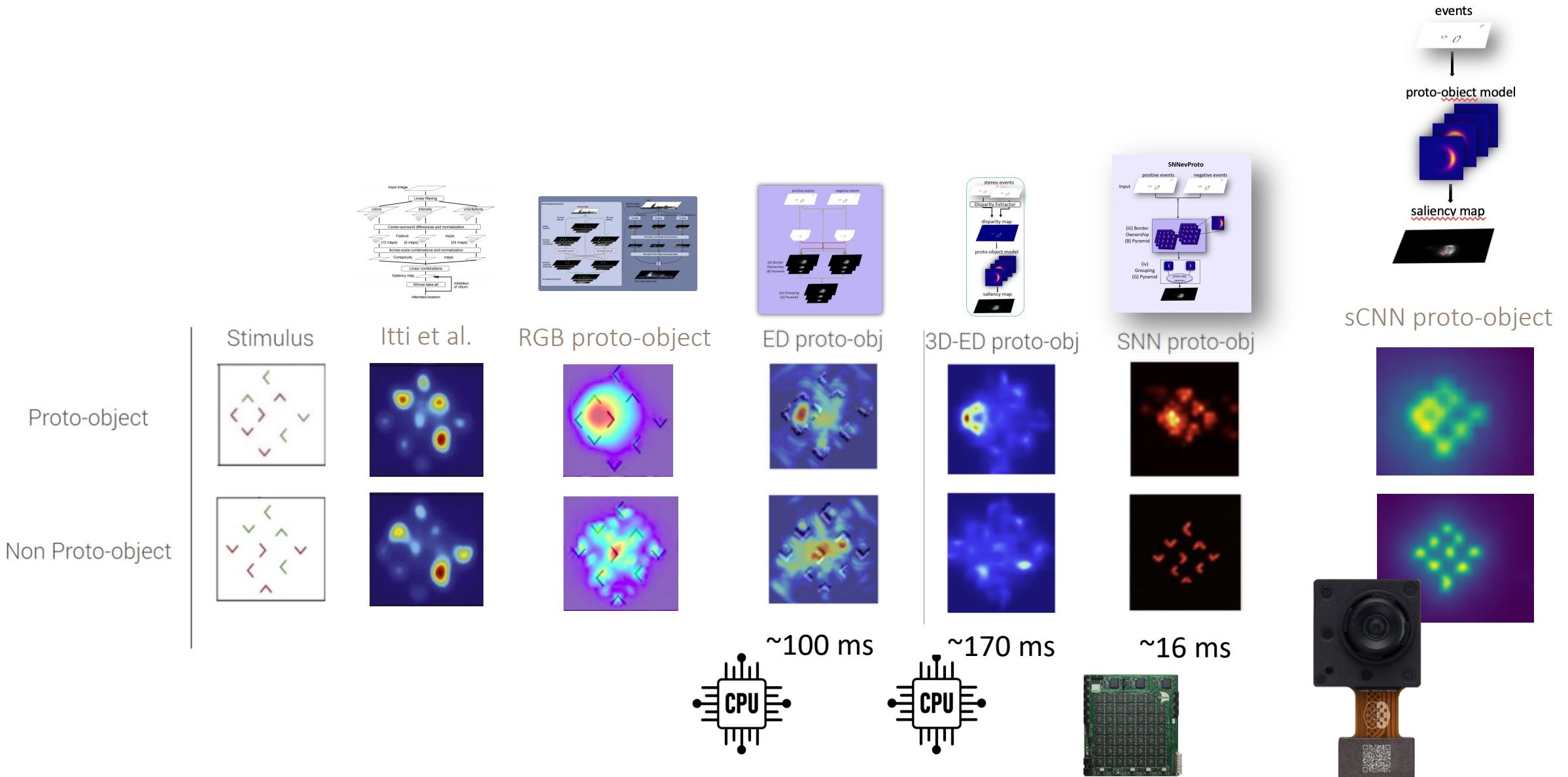
VM filters size (63,63)



VM filters size (84,84)









WORK IN PROGRESS

- Inhibition
- Positive and Negative events
- Real-world data
- Deployment on the chip
- Optimisations of the code
- Figure-ground RNN extension
- ...



Thank you

