

# AN INFORMATION MAXIMIZATION METHOD FOR STUDYING LOCATION-SELECTIVE CELLS

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## ABSTRACT

The set of possible stimuli analyzed by the sensory system live in a very high dimensional space. A central problem in neural coding is to understand what are the features of the stimulus that are encoded in the neural activity of single or many neurons. Assuming that neurons are optimized for information transmission, we can use mutual information maximization for extracting what are the relevant features encoded in certain activity patterns. We apply this algorithm to study different encoding strategies for location and velocity in a set of integrate-and-fire neurons that mimic location-selective cells found in Hippocampus and Lateral Septum. We show in these cells a relevant amount of information about location can be encoded in patterns that are not place-fields.

**Keywords:** Information Theory, Neural Coding, Features Extraction.

## References

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