

# Deliverables: 9 October 2017

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NOMADS

(NOvel Method of Autonomous Detection for Synapses)

# From Last Week

- Two-page Summary of Collman Paper
- Read relevant sections of NIH ImageJ User Guide
- Quant Comparison of Median and SVM algs
- Lit Review on Relevant Unsupervised Algorithms
- NeuroDataResource Documentation

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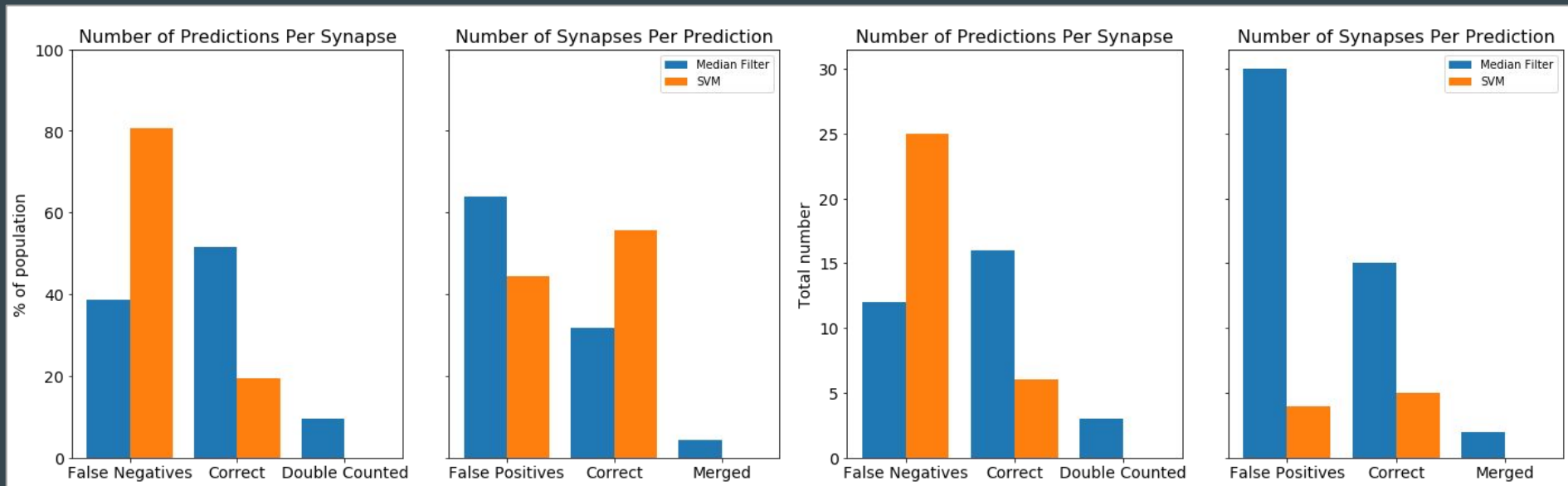
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# Two-page Summary of Collman Paper

Two-page summary [here](#)

# Collman Median Filter vs SVM Comparison

Code [here](#)



- Merged: Algorithm returned 1 synapse, but annotations revealed 2 synapses
- False positive: Algorithm returned a synapse, but annotations revealed NO synapses
- False negative: Algorithm returned NO synapse, but annotations reveal a synapse
- Double Counted: Algorithm returned 2 synapses, but annotations revealed only 1 synapse

# Lit Review

- Link [here](#)
- The TL;DR of what I learned
  - Unsupervised and weakly supervised learning is the move
    - Medical data is generally poorly labeled with small datasets
- Reduce Dimensionality, then Classify
  - High dimensional algorithms are complex and prone to error
  - 2 Main Avenues for Dimensionality Reduction
    - PCA/SVD or similar eigenbasis reduction technique (Simple way)
    - Autoencoders (More complex way)
- Next step - PCA to SVM? (Feedback pls)

# NeuroDataResource Doc Notebook

- Link [here](#)
- Describes basics of using the code to interface with boss:
  - How to get:
    - API Key
    - Collection/Experiment
    - Channel DTYPE
- How to use this information to:
  - Initialize NeuroDataResource Class
  - Use the NeuroDataResource “get\_cutout” method
- Dependencies required for the class (in requirements.txt format)
- This is likely all I will be doing with the NDR class for now

# For Next Week

- Implement PCA to SVM alg and produce results on Collman
  - Quant Comparison of Results to Median and Original SVM (Reach, prob next week)
- Finish reading NIH ImageJ User Guide
- Continue doing more informed manual annotations of EM data using NIH ImageJ User Guide