Computational Neuroscience Project 3

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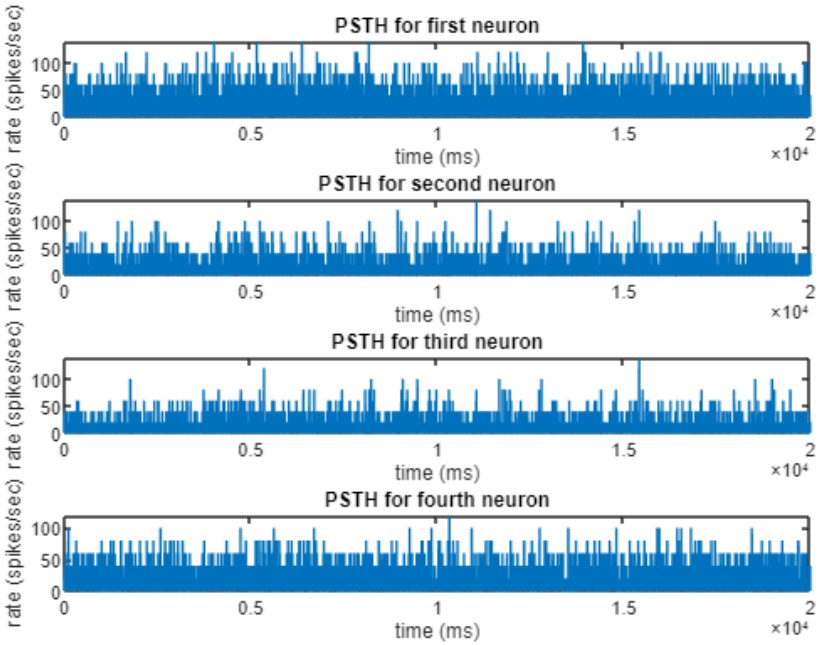
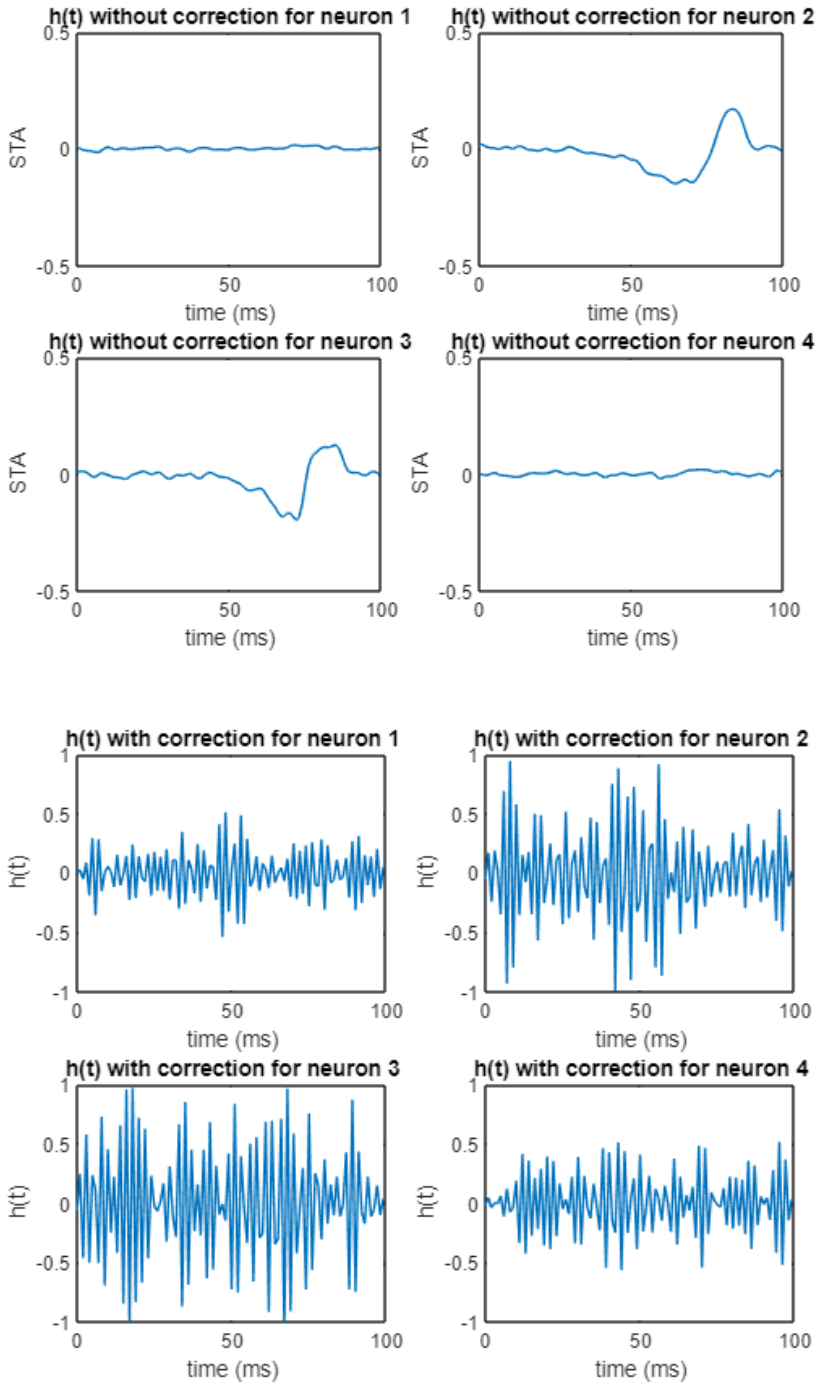
1. Figure Obtained from the graph looks like a Dirac delta function. The peak is 0.33. Variance equals 0.33 so it is a Gaussian.

2. The Corresponding figure was obtained for the bin size of 1ms

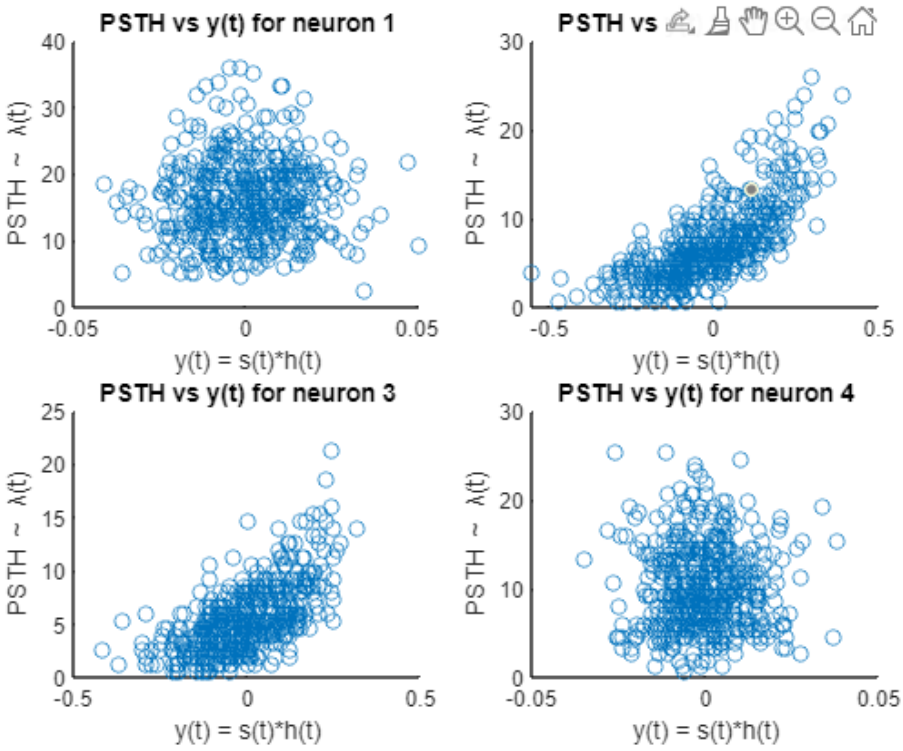


3.The Poisson distribution is commonly used to model the rate of random events that occur (arrive) in some fixed time interval.
For bin size of 10 ms- All curves are of Poisson nature.
For bin size of 20 ms- Only 2 & 3 neurons are of Poisson nature.
For bin size of 50 ms- Only 3 is of Poisson nature
For bin size of 100 ms- Only 3 is of Poisson nature
For bin size of 200 ms- None are of Poisson nature
For bin size of 500 ms- None are of Poisson nature

4. h(t) determined by Css^-1 is a correction term as the original distribution is only nearly gaussian.



5. Determining the output nonlinearity. In a nonlinear relationship, the output does not change in direct proportion to a change in any of the inputs.


PSTH vs y(t) for neuron 1
PSTH ~ λ(t)
y(t) = s(t)*h(t)
PSTH vs
PSTH ~ λ(t)
y(t) = s(t)*h(t)
PSTH vs y(t) for neuron 3
PSTH ~ λ(t)
y(t) = s(t)*h(t)
PSTH vs y(t) for neuron 4
PSTH ~ λ(t)
y(t) = s(t)*h(t)