**Data Loading & Preprocessing**:

* Normalized the Pixel intensities to [0, 1]
* by dividing with 255.0

**Spike Encoding:**

* Used Poisson Encoding, and encoded each pixel into a spike train across T = 100 ms.
* A pixel value determines the probability of a spike at each timestep using a Poisson process. Greater the intensity, more the frequent spikes.

**SNN - 3-layer network**:

* **Input Layer** (784 spike trains)
* **Hidden Layer** (100 LIF neurons)
* **Output Layer** (10 LIF neurons for digits 0–9)

**LIF Neuron Model**:

* Integrates incoming spikes over time.
* If the membrane potential crosses a threshold value, it emits a spike and resets.

Threshold Value = 1 Reset Value = 0

* Used loops to implement the time-based behavior over T timesteps.

**Training & Evaluation**:

* Calculated the Cross-entropy loss between spike count and true label.
* Evaluation is done by summing spikes over time and selecting the maximum.
* Training loss is tracked and visualized after each batch.