

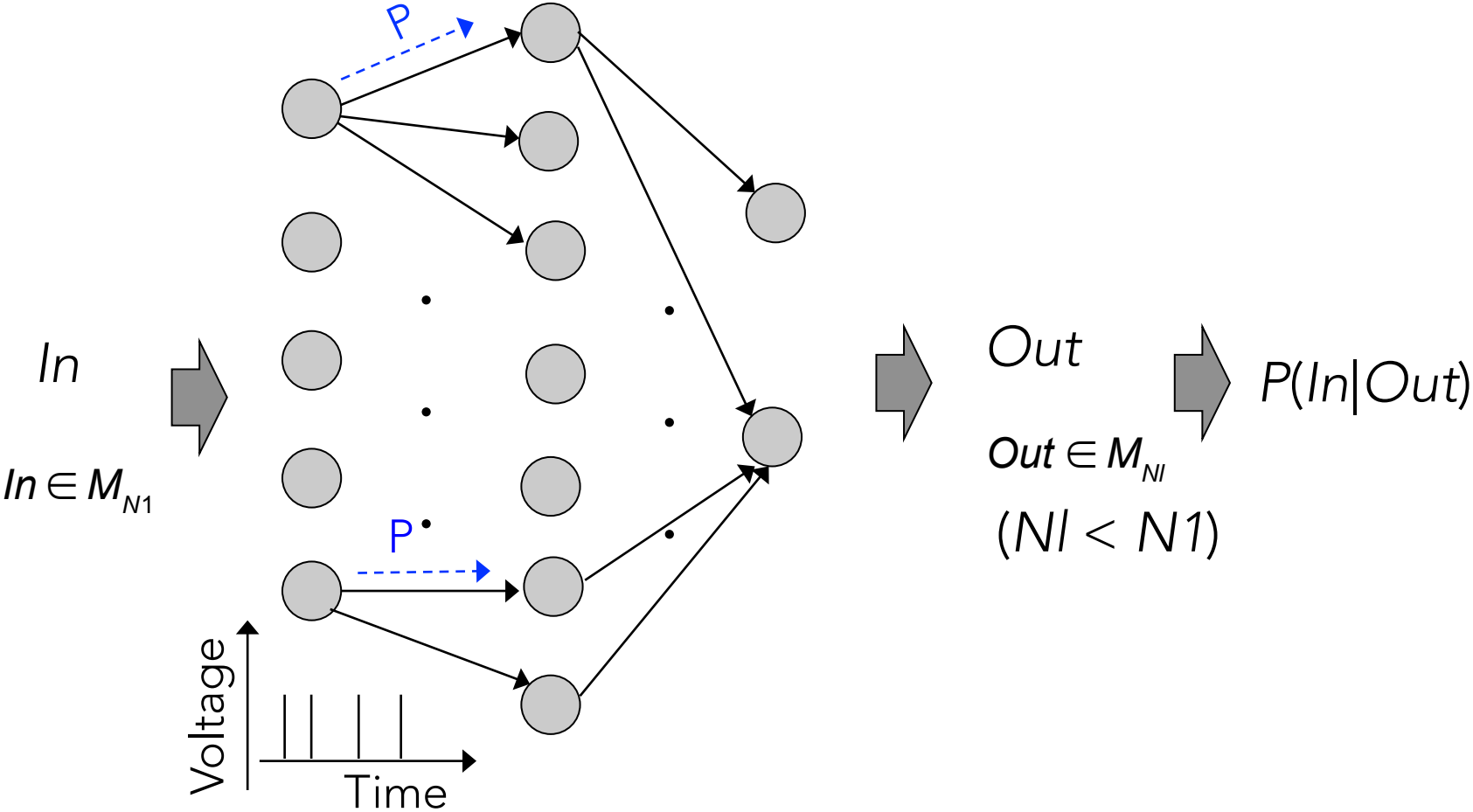
Leaky integrate-and-fire neuron circuit based on floating-gate integrator

Vladimir Kornijcuk, Hyungkwang Lim, and Doo Seok Jeong

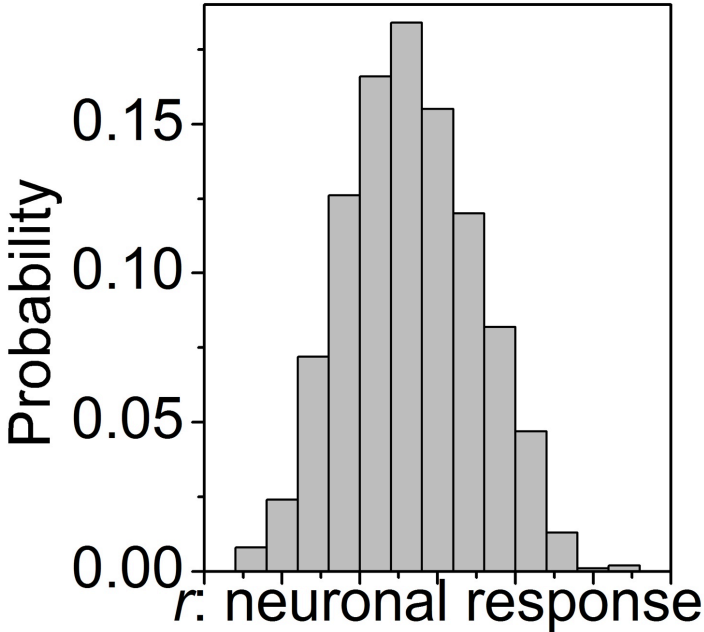
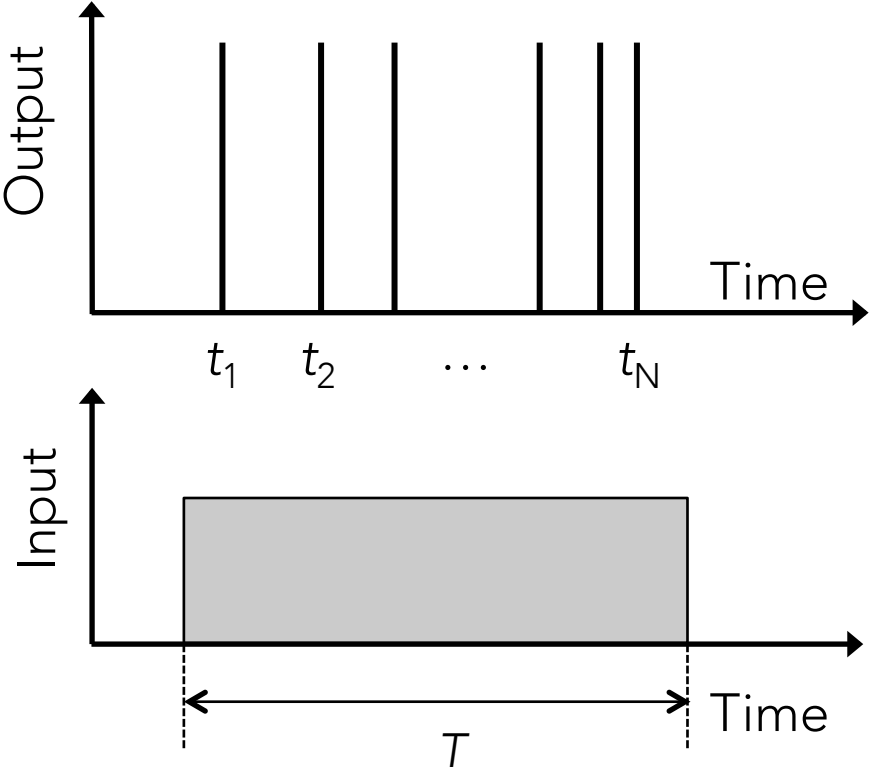
Korea Institute of Science and Technology

dsjeong@kist.re.kr

Stochastic spiking neural network abstracts features essential to recognition from raw input

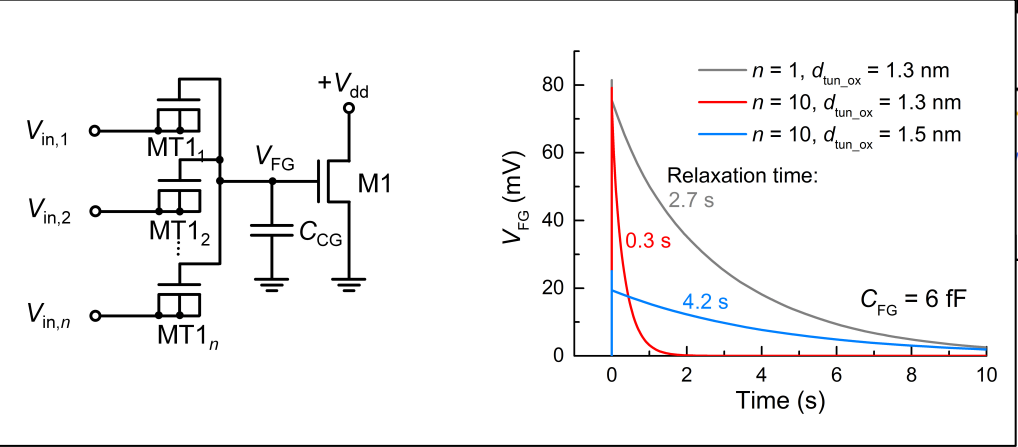
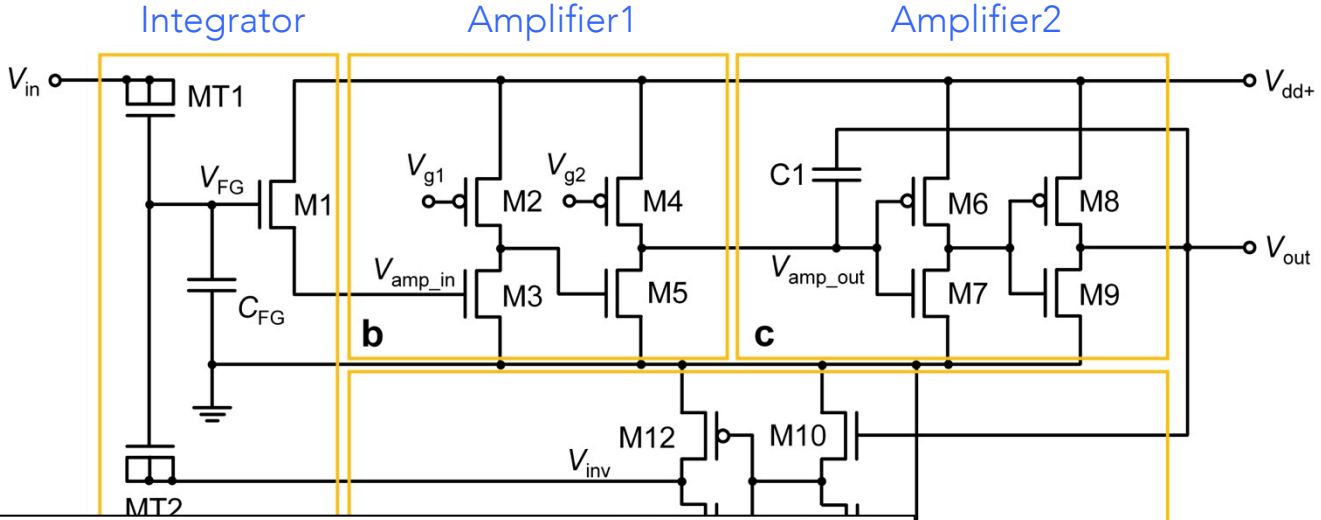


Stochasticity in neuronal response is essential to stochastic SNN



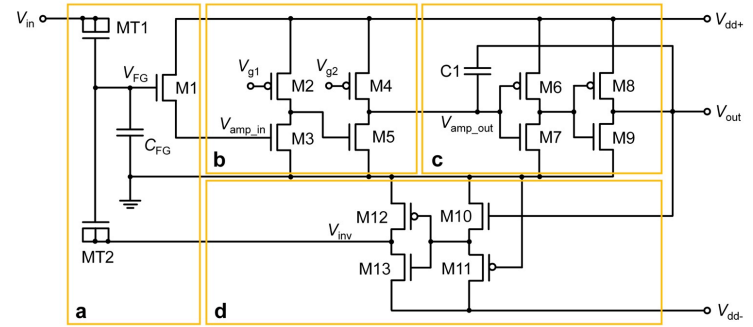
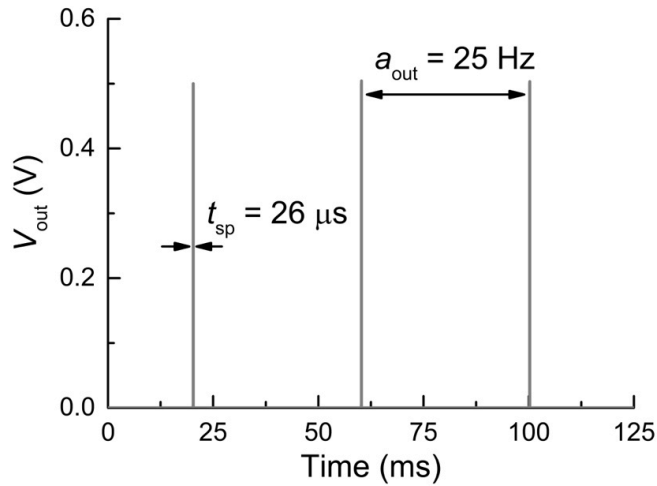
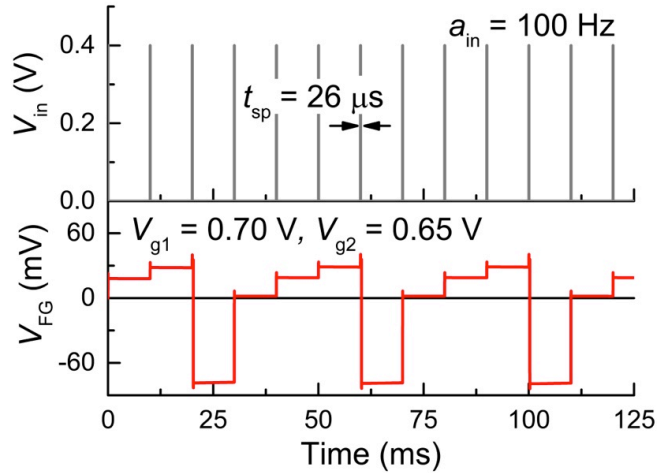
Stochasticity: variability in interspike interval (ISI)

Floating-gate leaky integrate-and-fire (FGLIF) neuron circuit

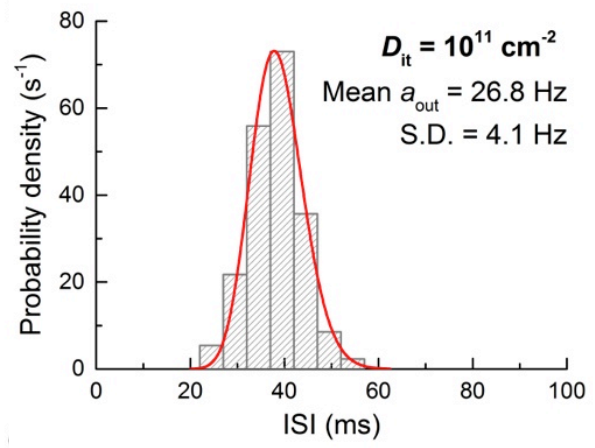
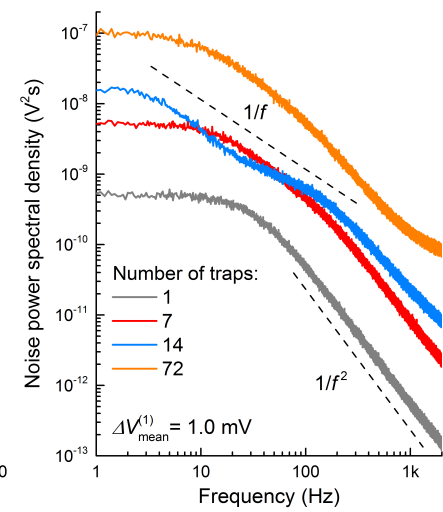
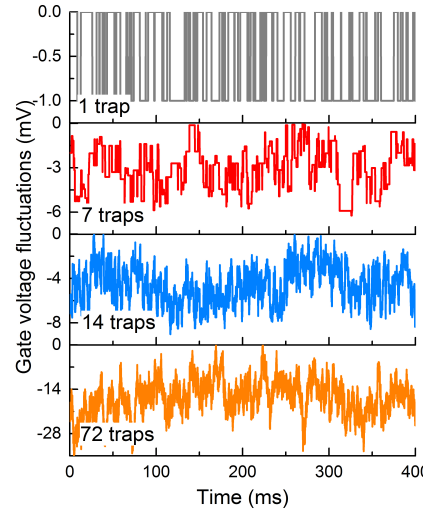
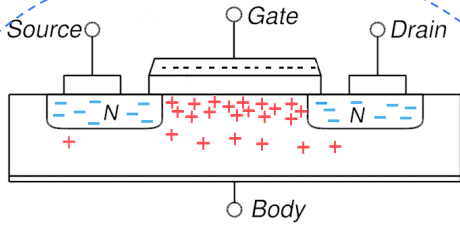
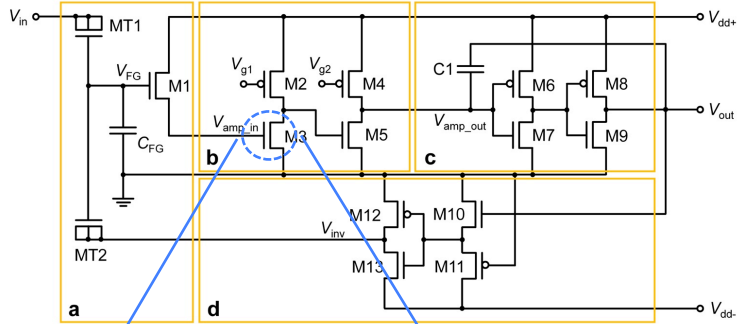


erter (reset)
 TSpice (BSIM 4 model: 65 nm technology)
 nijcuk et al., Front. Neurosci. 10, 212, 2016

FGLIF neuron spikes upon incident spikes



Stochasticity is on the ground of noise, e.g. thermal, burst, and flicker noise



Thank you very much!