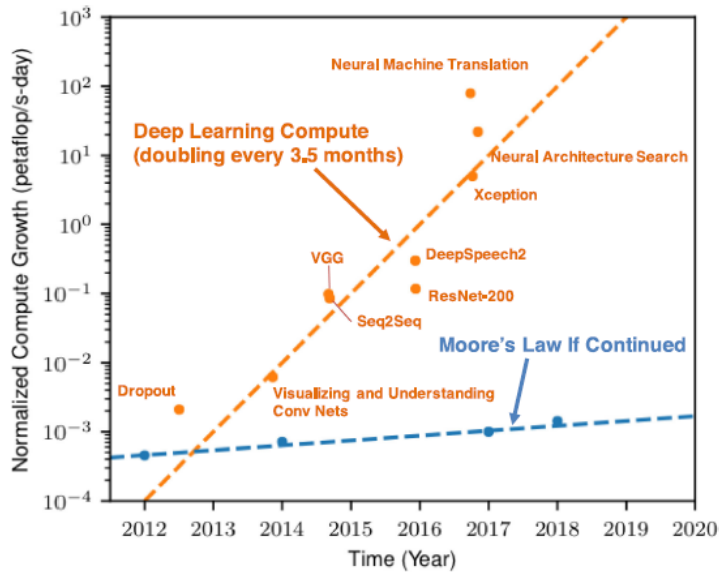
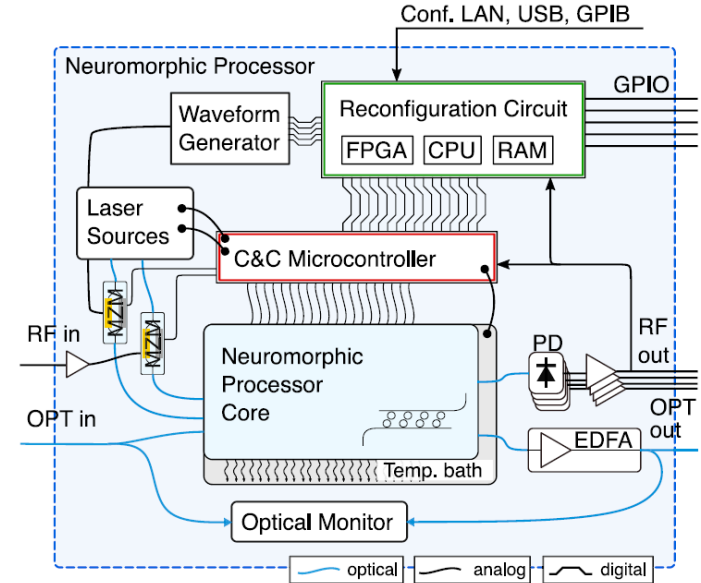


Neuromorphic Photonics

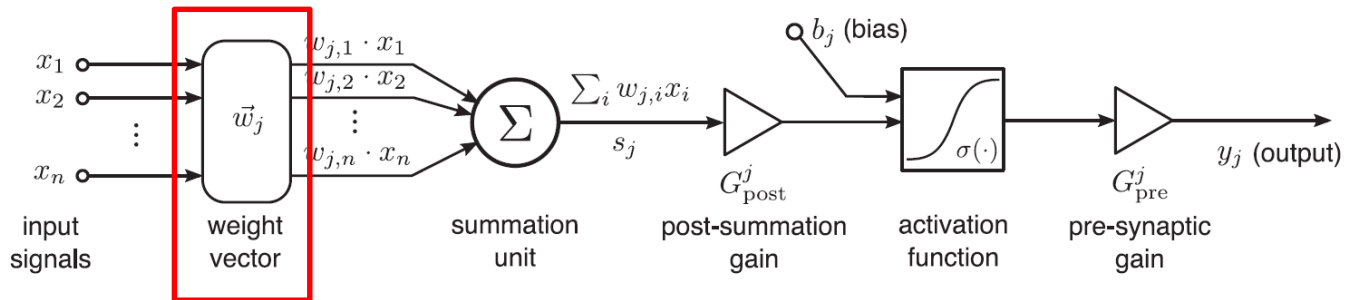
Growth of Deep Learning Computing



Example of Neuromorphic Processor



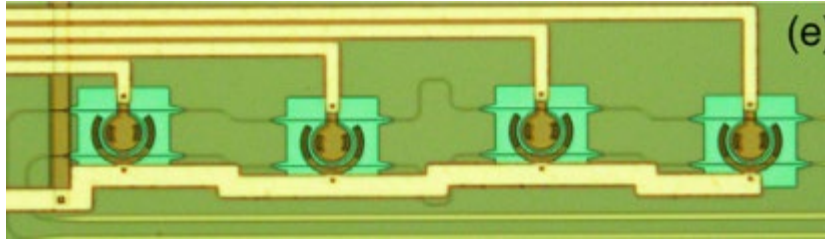
Building Blocks of Artificial Neuron with Synaptic Model



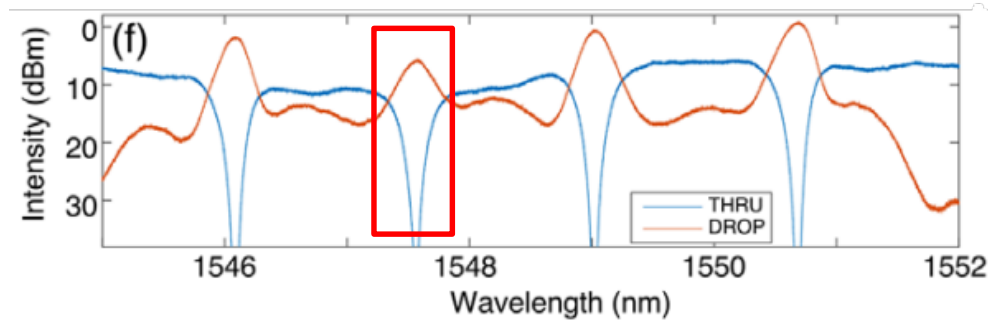
Ref) De Lima, Thomas Ferreira, et al. "Machine learning with neuromorphic photonics." *Journal of Lightwave Technology*

Weightbank Obstacle

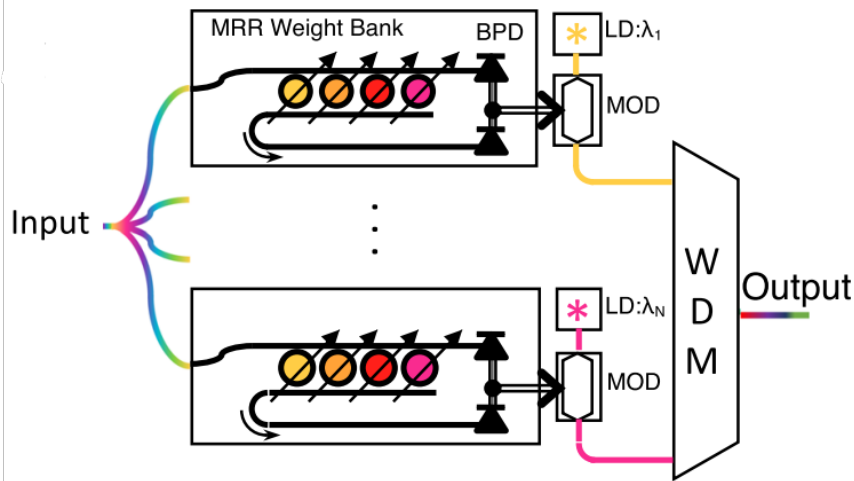
< 4-Channel Weightbank >



< Transmission – THRU & DROP >



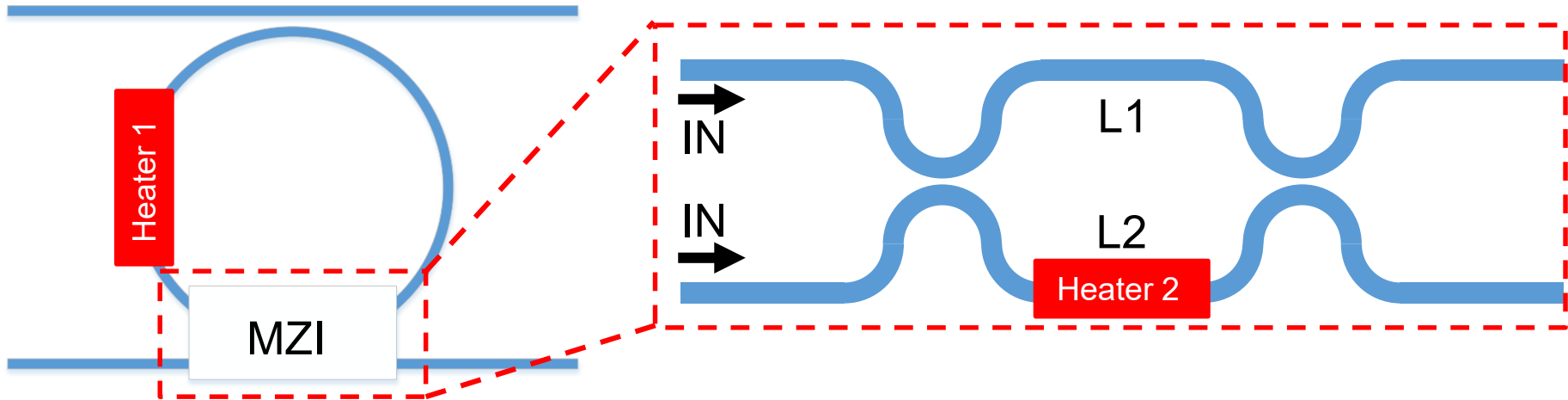
< Neuromorphic Computing >



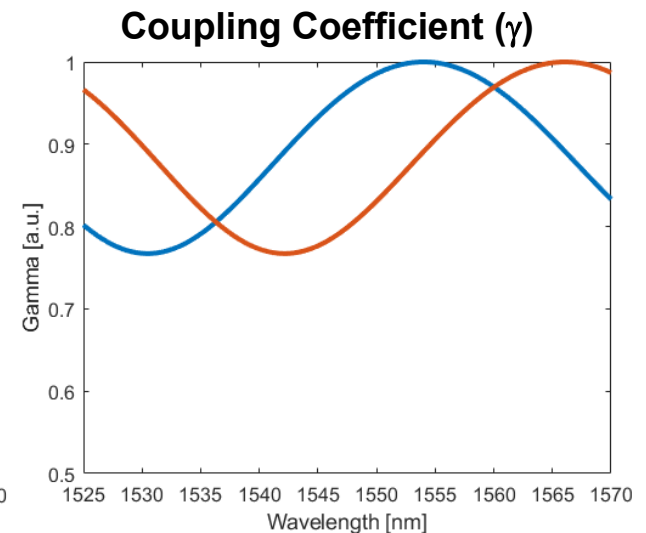
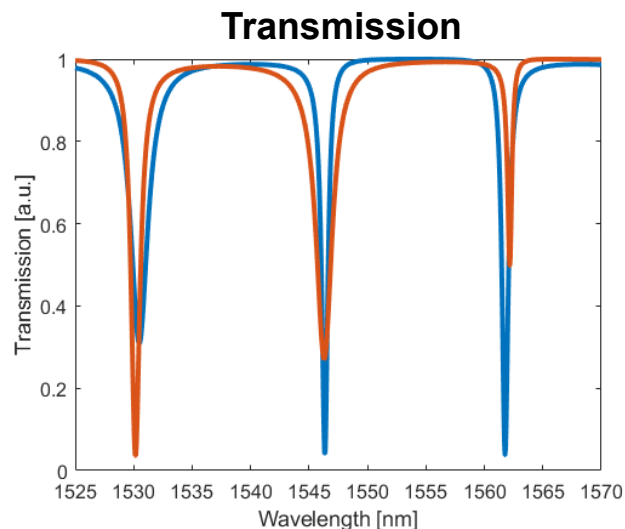
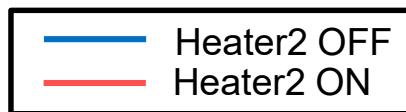
- Process variation \rightarrow THRU-DROP variation \rightarrow calculation limitation
- Increase in channel density \rightarrow more MRR required
- MRR's weight range tunability necessary

Coupling Tunable Weightbank

MZI-assisted MRR

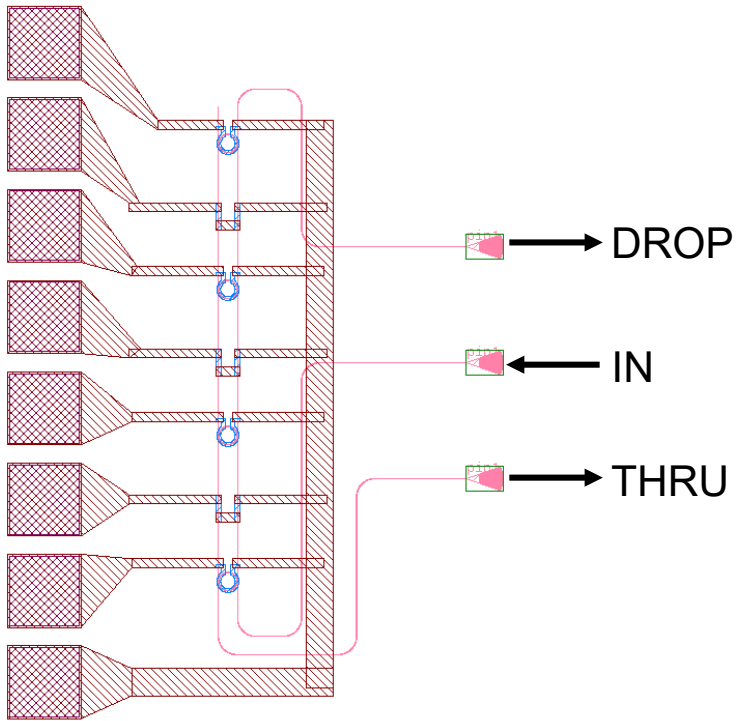


Simulation Results



Fabrication

Weightbank



Weightbank w/ Coupling Tunability

