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Photon flux calculation using Deep Learning

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Optical interferometry provides a sub-milliarcsecond resolution of astronomical objects. Intensity interferometry is a part of optical interferometry, which deals with correlation of intensities rather than amplitude of waves. For successful measurements, one needs large collecting area, such as an array of several telescopes separated by hundreds of meters with good time resolution of photon flux, e.g, imaging atmospheric Cherenkov telescopes such as H.E.S.S and CTA. The measurements have high photon rates, so that the pulses in PMTs from individual photons overlap. As a result, the rate determination by counting is unfeasible. We use several neural networks (such as CNNs, LSTMs, GRUs) in order to determine the rate of photons detected by the PMTs.

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