

## Universal light encoders: artificial intelligence hardware for light processing components and integrated systems

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### Abstract

In this invited talk, I will review our recent theoretical and experimental results in the field of Universal Light Encoders (ULE) artificial intelligence (AI) hardware for a new class of flexible ultra-flat components (thickness < 100nm) for high efficiency (close to unitary) vectorial control of light [1-4]. These devices are supported by a layer of “physical” neural network units in suitably engineered optical nanoresonators. These systems act as universal approximators of arbitrary defined input-output responses, processing information at the speed of light. I will discuss basic optical components and new integrated systems for the real-time processing of high-dimensional visual information.

### References

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