QUANTIC

The UK Quantum Technology Hub in Quantum Enhanced Imaging

Optimising Imaging Systems:

Getting the most information possible out of the available photons

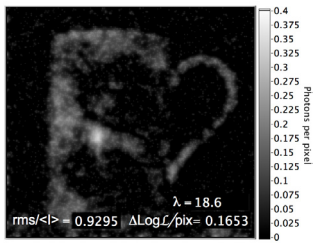
All imaging systems have constraints such as Signal to Noise Ratio and sampling time available. In certain situations, low light, sub sea or certain life science applications real time constraints limit the number of samples that can be obtained.

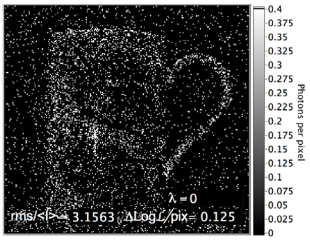
Algorithms can be tuned to identify specific objects, e.g. a vehicle or a person or a building. The system can then be reconfigured whilst in use, allowing a human user, with a rich understanding of the current context to check the automatic systems in real time, quickly testing the plausibility of images generated subject to different assumptions before critical decisions are made.

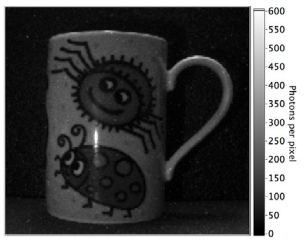
Techniques being explored include the application of Deep Convolutional Neural Networks, classical regularization algorithms, and computational approaches such as fast Hadamard transforms and application of Graphical Processing Units (GPUs).For example, this has allowed us to advance the Single Pixel Camera from static imaging to video rate.

Main application areas include:

- Security and Defence
- Emergency Services
- Life Sciences
- Quality Control
- Scientific research instrumentation







QuantIC has a £4M Partnership Resource Fund to support industry led projects to develop our new technology and facilitate its translation to market.

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