Project proposal

Project title	Determining the Origin of Digital Imagery
First Supervisor	Dr — Darrell Greenhill
Second Supervisor	Prof Graeme Jones
School	Computing and Information Systems
Other member of supervisory team (no more than three KU supervisors in total)	
Specific requirements beyond 2:1 degree	

Project summary

(max 4,000 characters)

MSc by Research

Digital cameras such as mobile phones, webcams, consumer cameras or CCTV cameras have become widely available in recent years. Supporting technologies have ensured that acquisition, storage, distribution and visualisation of enormous volumes of video material is within the reach of all. Consequently such imagery is likely to play an increasing role as evidence in police investigations or for courts of law. This proposal aims to develop a method of establishing the origin of digital imagery – specifically, whether a particular video sequence was acquired from a particular camera based on the unique intrinsic pixel-defect pattern associated with every manufactured camera. The key issues which require addressing can be summarised as the following scientific objectives:
– To characterise CCD 'fingerprints' and support expert witnesses by providing statistical evidence about image origin.
– To develop a model of the generic digital acquisition process, and algorithms to both parameterise this model given access to the target camera and to recover the camera's pixel-defect 'fingerprint'.
– To develop and validate a probabilistic matching scheme (capable of supporting a robust and statistically defensible forensic test) which will establish the likelihood that any specific video sequence could have originated from a specific camera