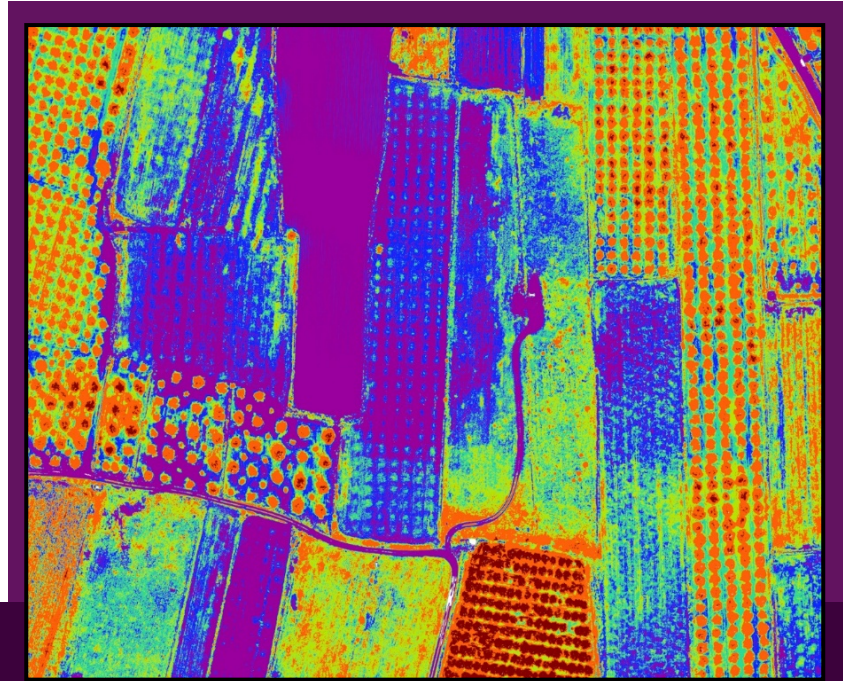


UNIVERSITY OF
PORTSMOUTH



The Application of Photography in Investigating Fraud

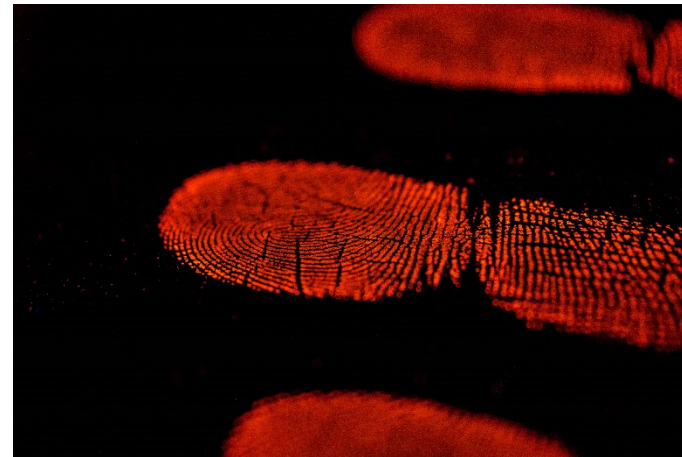
Dr Paul Gilmour

Lecturer in Criminal Justice and Policing

The application of photography in investigating fraud

- As fraud has evolved it has become more organised and increasingly cyber enabled and committed across borders of law enforcement jurisdictions.
- Little attention has been given to how forensic photography can help tackle emerging crime types, like fraud.
- This study focuses on the advancements in photography and how imaging-science techniques can apply to fraud investigation.

“A photograph paints a thousand words”



Royal Photographic Society distinctions

Category of 'Research, Education and Application of Photography (REAP)', now simply called 'Research'.



LICENTIATE

ASSOCIATE

FELLOWSHIP

The Application of Photography in Tackling Emerging Crime

Human trafficking

Organised cross-border crime

Cybercrime

Trafficking of firearms

Terrorism

Drug trafficking

Environmental crime

Fraud and money laundering

(EUROPOL, 2017; INTERPOL, 2017; NCA, 2016)

Origins of forensic photography

As early as the 1840s, the police used photography to record mugshots of suspects.

By 1857 the New York police had opened a gallery so that the public could see the daguerreotypes of

“hookers, stooges, grifters and goons”.

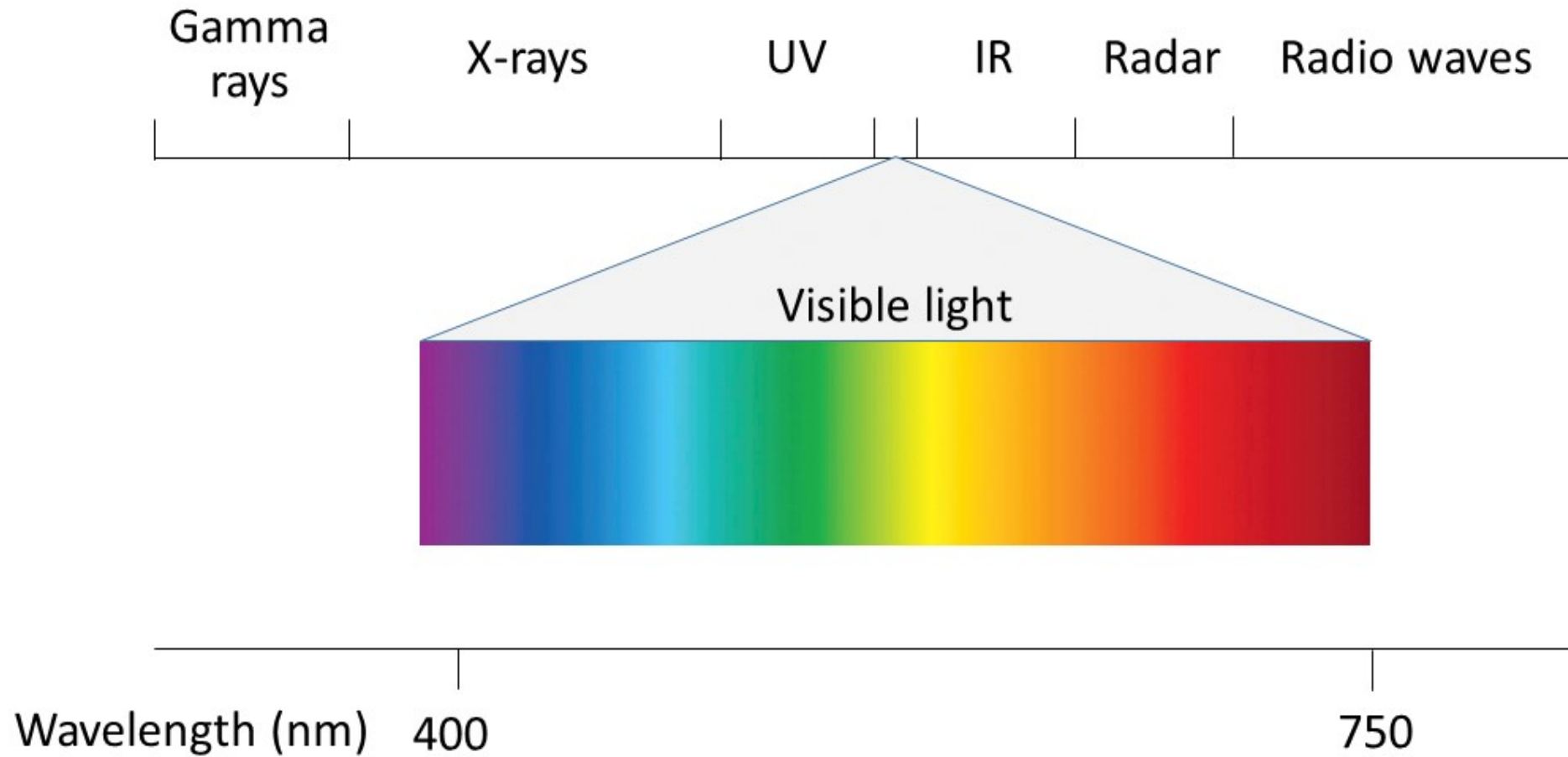


Origins of forensic photography



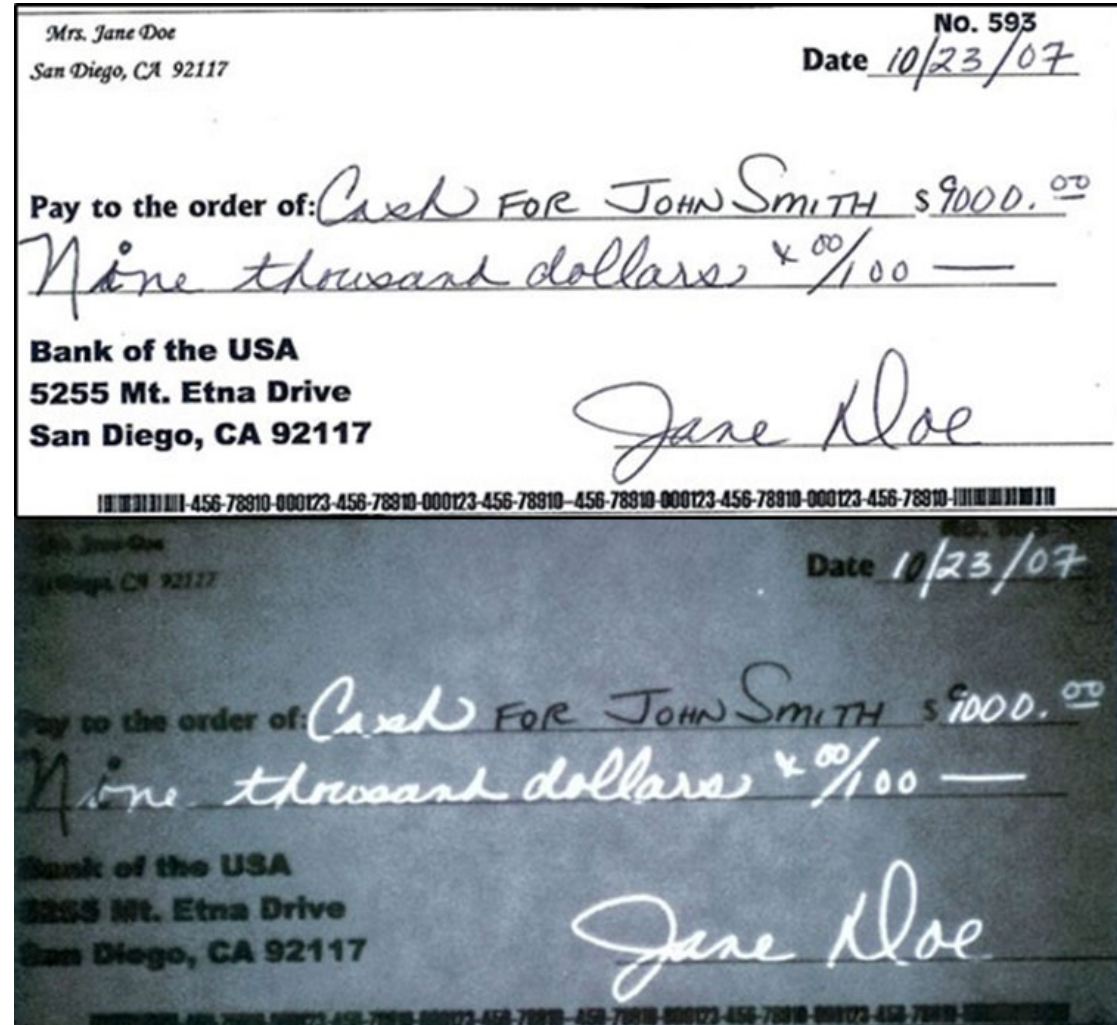
Bertillon method by Alphonse Bertillon (1879)

Alternative light sources (UV / IR)



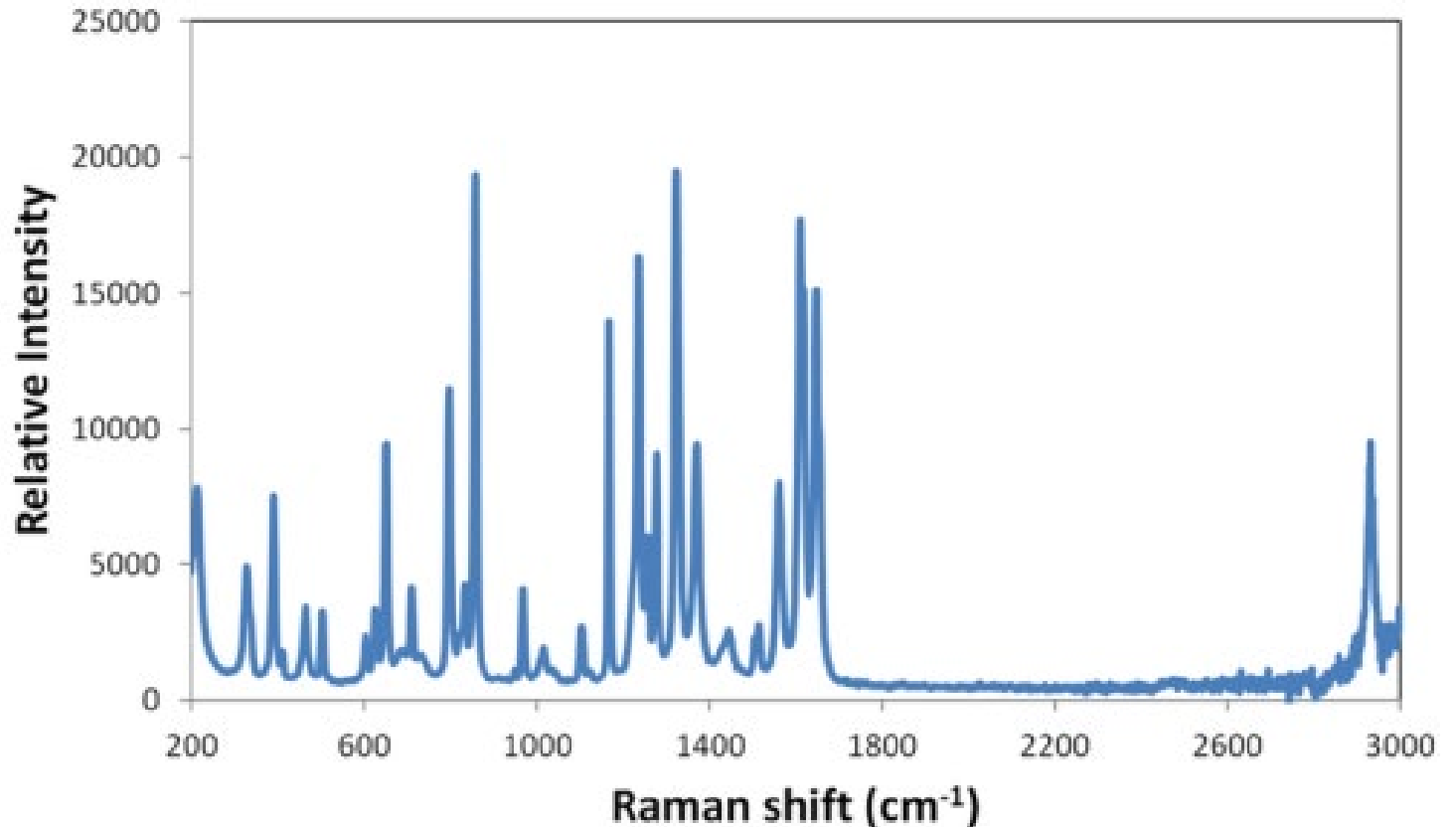
Infrared photography

- ✓ Reveal details not visible to the naked eye
- ✓ Non-destructive



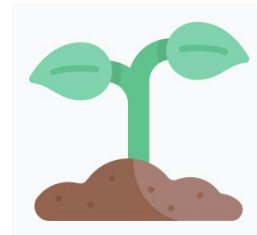
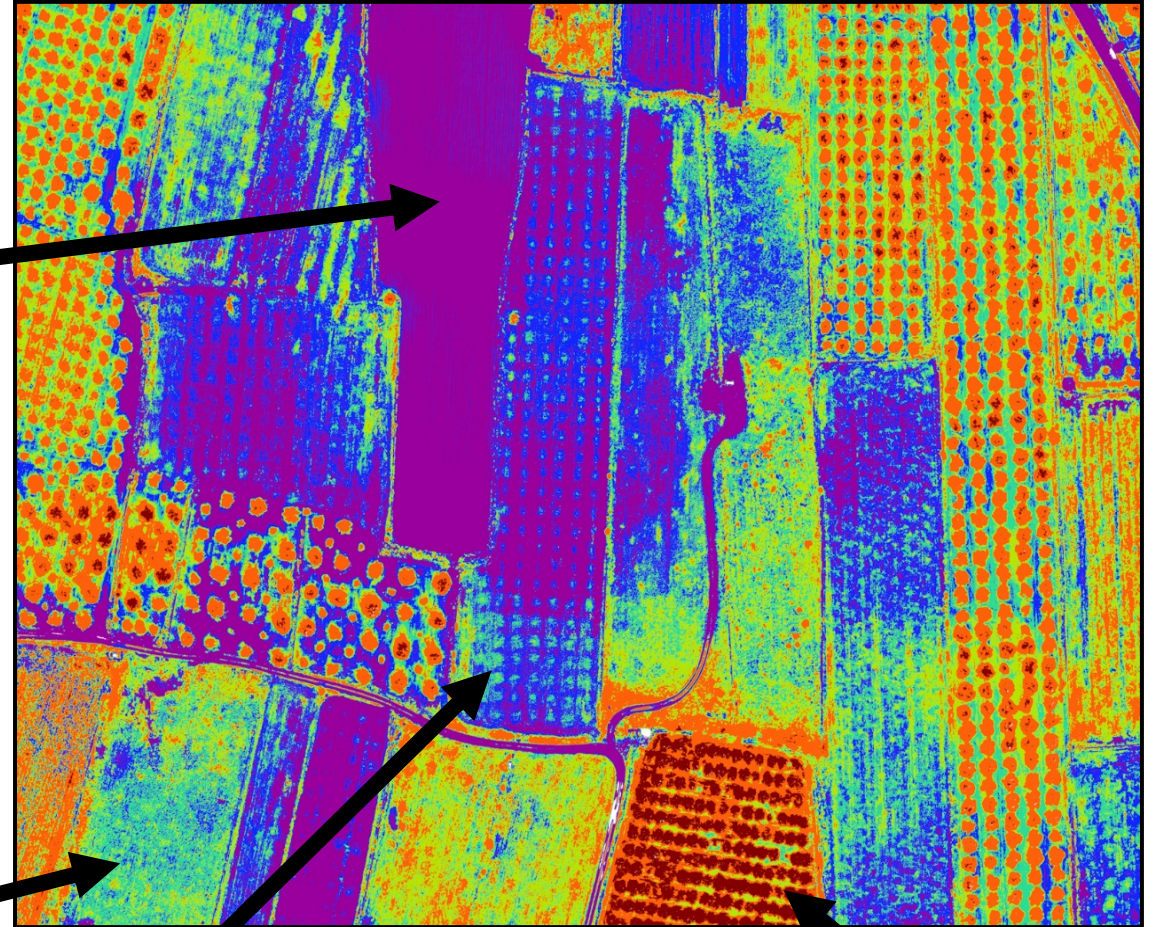
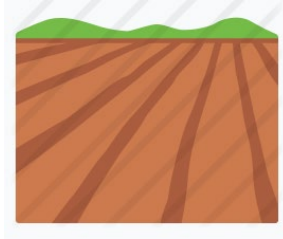
Raman spectroscopy

- ✓ Detect drugs (paracetamol) and bulking agents
- ✓ Inks and pigments
- ✓ Bank notes and questioned documents



Hyperspectral imaging

- ✓ Increased sensitivity.
- ✓ Integrity.
- ✓ Repeated examinations.
- ✓ Confirm veracity of insurance claims.

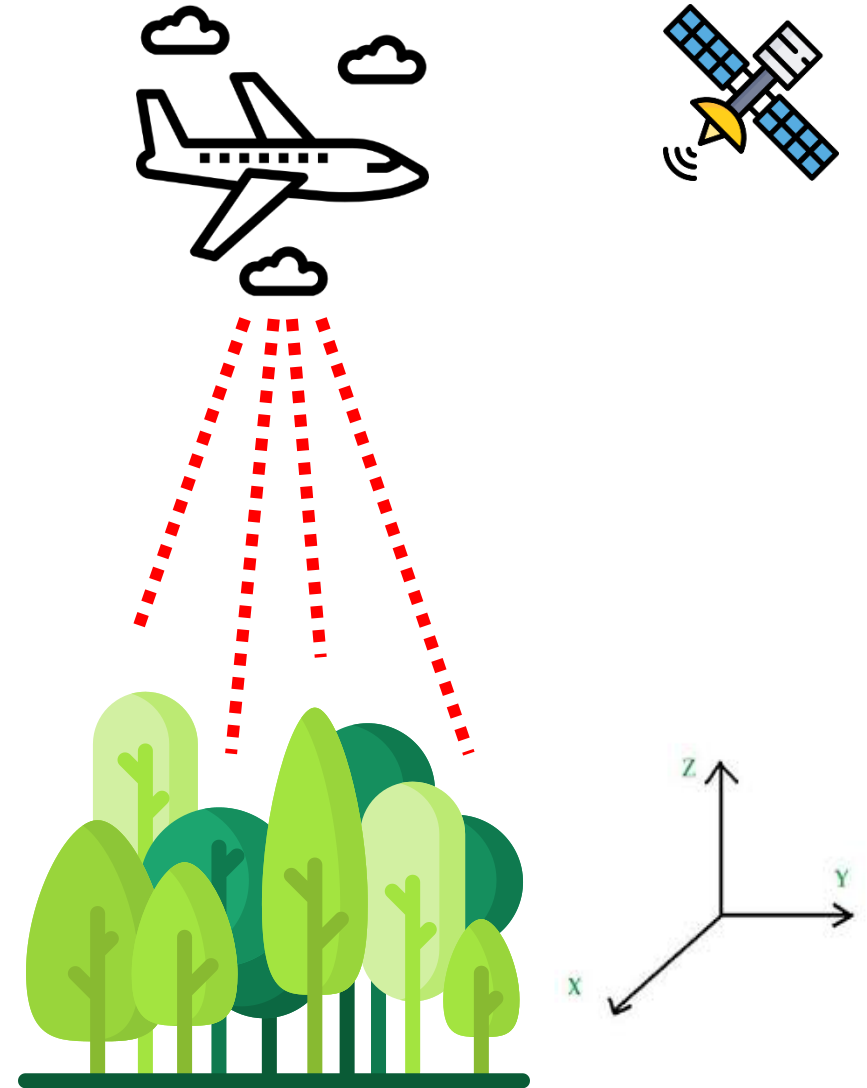


Aerial view of crops



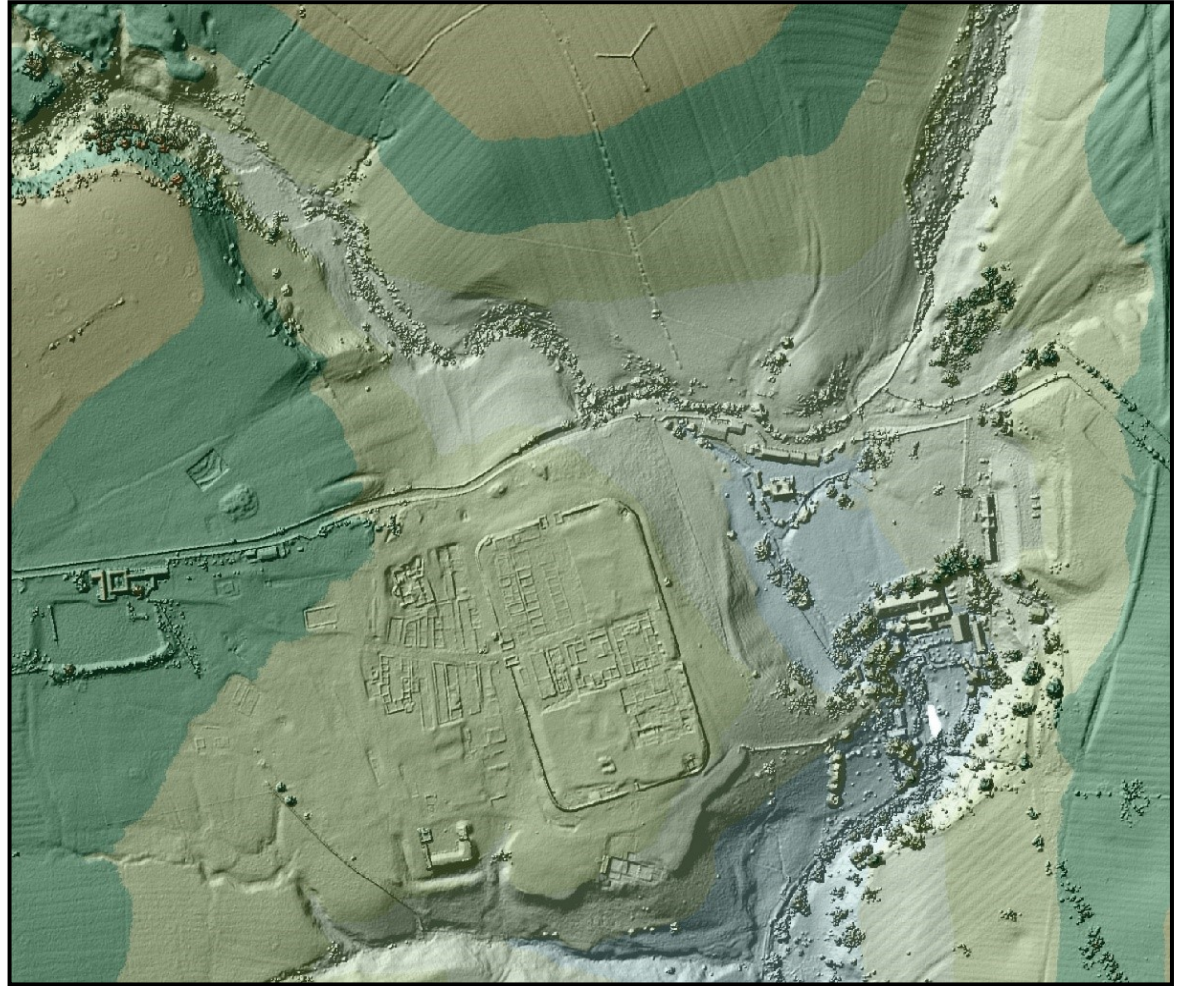
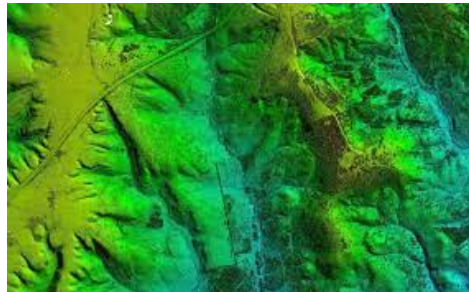
Light detection and ranging (LIDAR)

- Laser beams measure the height of ground surface and other features of landscape.
- Used in environmental survey mapping.
- Known x , y and z coordinates recorded using a GPS receiver at the time that the laser pulses are sent and received.



Light detection and ranging (LIDAR)

- ✓ Identifying murder scenes, body deposition sites.
- ✓ Environmental crimes, illegal exploitation of wild fauna and flora.
- ✓ Waste management.



Vindolanda

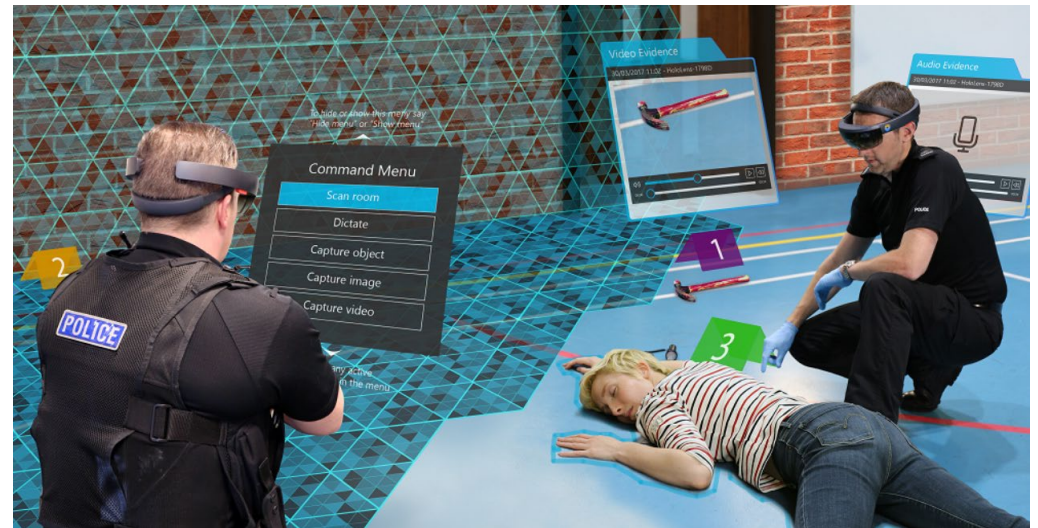
Drones

- ✓ Thermal imaging techniques to locate suspects and find hot spots in fire scenes, including the seat of the fire.
- ✓ In South Africa, the National Parks Authority deploy drones equipped with night-time infrared cameras to monitor rhinos and elephants, which are endangered species.
- ✓ Detecting poachers operating under the cover of darkness.



Other applications

- LANDSAT (Land to Satellite technology).
- Geotagging.
- Augmented Reality Survey cameras (e.g. Pokémon Go).
- Gait analysis, facial recognition.
- Body-worn video.



Current research

- Combating wildlife crime - using camera traps.
- 3D printing.
- Augmented reality (AR) and virtual reality (VR).

Student training, combating maritime Piracy.

- Detecting Human Remains.
- Forensic Crime scenes.

Current research



Combating wildlife crime and poachers



Osprey nest monitoring

Combating wildlife crime and poachers



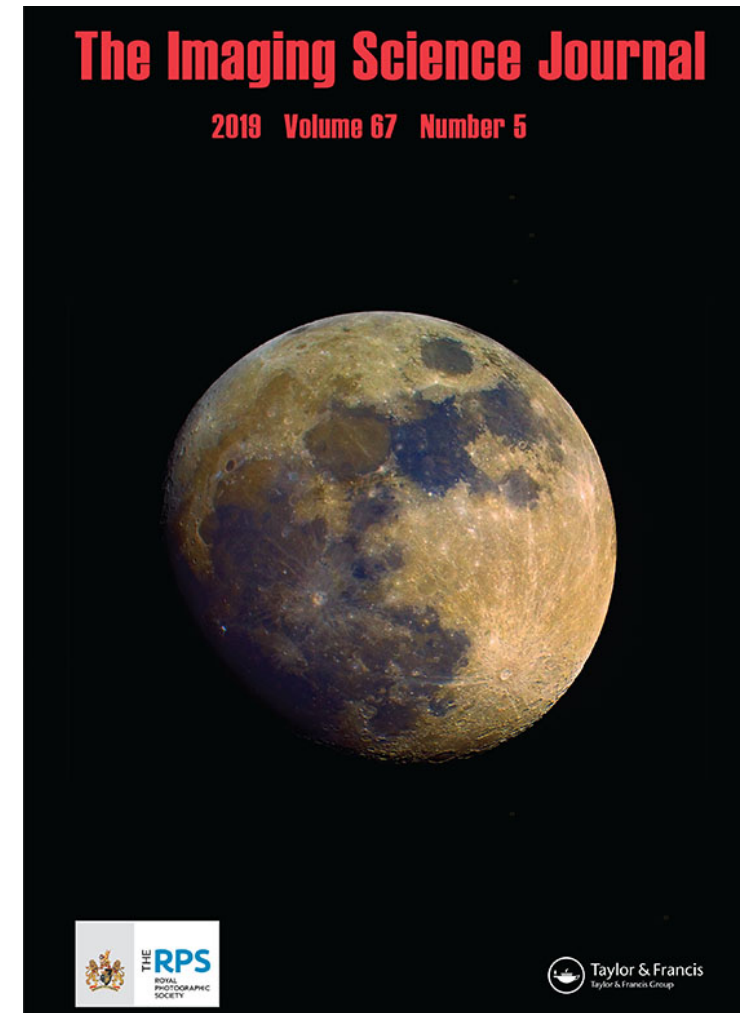
Detecting fingerprints on pangolin scales



Conclusion

- Photography must embrace continual change to ensure that it remains relevant to modern policing.
- Fresh approaches are essential.
- Utilise new technologies and adapt to tackle the increasingly demanding scope of fraud types.
- We must become more sophisticated in the tools we use.

Gilmour, P. M (2019). The Application of Photography in investigating fraud, *Imaging Science Journal*, 67(4), 215-223.
<https://doi.org/10.1080/13682199.2019.1600254>



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