Digital team

Case Study

On the morning of the 17th June 2014 Mingzi Yang was murdered at her home address in Lincoln. She died as a result of head injuries after being battered to death inside her mid-terrace home.

During the subsequent investigation, Lincolnshire Police recovered more than 3000 hours of CCTV footage from surveillance systems across Lincoln city. Police officers spent many hours reviewing the recovered CCTV footage and discovered that a cyclist was seen in the vicinity of Mingzi Yang's home address at around the believed time of the offence.

The Police believed that the cyclist was the offender and further review of the recovered footage revealed over 40 separate sightings of the cyclist at 16 different locations in the city area on the morning of the 17th June.

Miss Yang's fiancé was initially arrested on suspicion of her murder but Lincoln Police turned their attention to her ex-husband Wai Hong Tsang after examination of the satnav in his car revealed he had stopped in a lay-by on the outskirts of Lincoln on the morning of the murder.

A case against Tsang soon began to build and the recovered CCTV footage was submitted to KFS for further analysis.

The Digital Team was asked to undertake an in-depth analysis of the footage to determine a number of things, including whether:

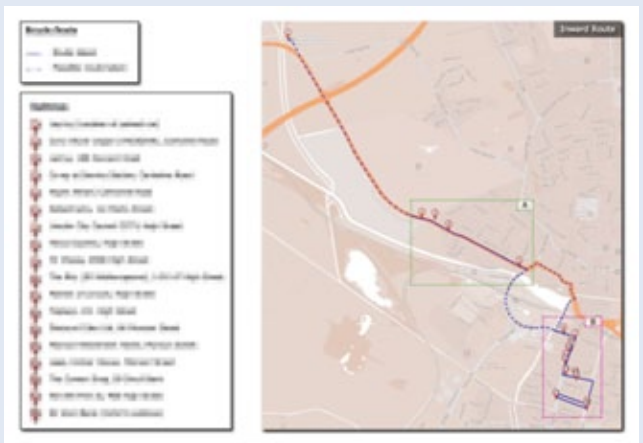
- The cyclist seen at each of the locations in the CCTV footage was one and the same person.
- The cycle being ridden by the offender in the CCTV footage was of the same or similar type to a mountain bike known to have belonged to Tsang.
- The presence/absence of a bicycle in the inside rear of Tsang's car when he stopped at a service station later on the 17th June.
- The gloves worn by the cyclist and gloves recovered from Tsang's home address were of a similar type and style.

Reporting Manager Steven Lamb and the Team set to work on analysing the large amount of recovered CCTV footage and produced image analysis and comparison charts in response to each of the questions they were asked to consider.

Some examples of the analysis are shown below:

Reporting Manager Steven Lamb gave evidence over three days during the month long trial at Lincoln Crown Court and the findings of the analysis and the conclusions reached were clearly presented to the jury.

In January 2015, Wai Hong Tsang was found guilty of murdering his former partner, Mingzi Yang and sentenced to a minimum of 28 years imprisonment.



1. Map showing CCTV sighting locations of cyclist travelling into Lincoln city.

2. Observations made of the cyclist showing features of the rider and cycle for comparison.

5. Comparison of gloves worn by offender with recovered gloves.

3. Comparison of cycle ridden by offender with cycle belonging to Tsang.

4. Comparison of object in rear of vehicle belonging to Tsang with cycle ridden by offender.

If you have any questions about the services offered by our Digital Forensics team or if you require advice with a live case, please contact Steve Lamb or one of the team on

+44 (0)2477 712246 or email steven.lamb@keyforensic.co.uk

CasefileCorner

KFS steps in to help Swedish Authorities

Forensic DNA evidence from a high-profile murder case in Sweden has been submitted to KFS for a second opinion. The original analysis in Sweden determined that blood found at a murder scene in 2011 was probably from an animal. When the case came up for appeal recently, the Swedish Police asked KFS to undertake an independent, re-examination of the evidence.

Investigators from the Swedish Police had such strong suspicions, that they flew over to the UK and hand-delivered the evidence to KFS. Steve Harrington, Senior Biologist, examined the physical evidence taken from the crime scene and by painstakingly applying a series of sophisticated scientific techniques, was able to establish that there was a high concentration of DNA and that it was infact **human**, not animal. Furthermore, the blood was shown to match the deceased's reference DNA profile.

The case involves the mysterious disappearance of 62-year old Swedish millionaire businessman, Goran Lundblad from his home in Kalmar in the south of the country. Reported missing by his daughter and her boyfriend, (Sara Lundblad and Martin Tornblad) his body was eventually found in remote woodland.

Motivated by the prospect of a significant inheritance, both were found guilty of his murder and each were sentenced to 18 years imprisonment.

Following the presentation of this evidence in court the conviction of the pair was upheld.

Volunteers wishing to have their DNA profile produced in under two hours using the RapidHIT® instrument

RapidHIT® at Leicester University

We recently showcased our RapidHIT® rapid DNA instrument at **two** events organised by Leicester University. The first event was open to the general public and coincided with the re-interment ceremony of King Richard III (whose remains were found beneath a car park in Leicester last year). The other event focused on R & D and in particular, advances in DNA technology.

A Fond Farewell to Roger King BSc, PhD, FRSC

We say a fond farewell this month to Director of Operations, Dr Roger King, who has been with KFS right from the company's very early days. Roger takes early retirement, ending his long and remarkable career in forensic science.

Roger embarked upon his career as a forensic scientist after obtaining a degree in Applied Chemistry at Sheffield Polytechnic, followed by a PhD in Novel Explosives, sponsored by the MOD at the Propellants Explosives and Rocket Motors Establishment in Waltham Abbey.

He began his career in forensic science at the Home Office Forensic Science Laboratory in Wetherby in 1980, where he worked as a Court Reporting Officer in the Forensic Chemistry department. He became skilled in the areas of footwear, glass, paint and particulate examination and chemical analysis. There, Roger also gained knowledge and experience in Fire Examination work, attending his very first solo fire scene which was the Bradford City Football Club fire in 1985. The disaster sadly, took 56 lives when the stand burned down during the match.

In 1987, Roger moved to the Forensic Science Service (FSS) laboratory in Birmingham (Priory House) where he joined the explosives and gunshot residues team, working on a number of major cases, including the inquiry into the conviction of the IRA Birmingham Pub Bombers (The 'Birmingham Six'). Roger worked on the re-examination of forensic exhibits, under the direction of West Midlands Police and the appeal case eventually led to the release of all six men convicted of the pub bombings.

Around the same time, there was a spate of inner city riots, necessitating Roger and some of his colleagues to be trained in how to assemble and throw a petrol bomb!…not a run-of-the-mill training programme by any means!

By the early nineties, Roger's career with the FSS changed direction, taking him into the areas of planning, policy, R & D and quality management. Having successfully delivered a major project to implement an SAP Enterprise System, Roger was then offered a role with the newly formed Key Forensic Services.

In those early days at KFS, Roger headed up Operations and was responsible for all FOUR forensic scientists! Roger also took responsibility for developing criminal defence work for KFS, resulting in his first big case which was the Omagh Bombing. This high-profile case did much to build the reputation and credibility of KFS in the new, competitive forensic landscape and resulted in Roger being asked some time later, to lead on the forensic aspects of the re-investigation of the Lockerbie Bombing case, in which Pan Am flight 103 was subjected to a terrorist attack. A further high profile case, the appeal of Barry George (charged with murdering TV personality Jill Dando) also involved Roger and his team.

Around this time, KFS was expanding rapidly to support a number of National Forensic Framework contracts which it had been successful in winning and Roger quickly found himself responsible for a good deal more than four operational staff! Roger has continued to manage and build this highly-experienced and skilled team of caseworking scientists and to help drive the business to become the success it is today.

Roger plans to enjoy his retirement pursuing his passion of watching cricket, whilst reflecting on a long, highly-successful and rewarding career in forensic science, where he has made an enduring and important contribution.

We wish Roger all the very best for his retirement.

Please call us on +44 (0)2477 712246

University of Warwick Science Park, Sir William Lyons Road, Coventry CV4 7EZ, UK

e sales@keyforensic.co.uk w keyforensic.co.uk

keyinfo

Summer 2015

Delivering Information from Key Forensic Services Ltd

RapidHIT® accredited to upload DNA profiles to the National DNA Database®.

Key Forensic Services (KFS) has just become the world's first forensic organisation to obtain ISO17025 accreditation for the transformational DNA profiling device, RapidHIT®, and has already begun loading DNA profiles to the National DNA Database®.

This landmark achievement marks three years of validation and accreditation work being undertaken by KFS, working with world leader IntegenX.

This means that KFS can now offer its customers a 3 hour DNA profiling service for the processing of mouth swab samples taken from arrestees. The RapidHIT® system, developed by IntegenX Inc. in California, takes approximately two hours to produce a DNA profile, which is a radical reduction in the time taken using traditional DNA processing techniques in a laboratory environment.

This news makes KFS the first forensic service provider in the UK to offer this unique service to UK police forces, setting it apart from its competitors and helping investigators to detect crime more quickly and more efficiently.

Commenting on this news, KFS Group Managing Director Paul Hackett said: "This new, same day DNA profiling service turns what was previously considered a 'premium' or urgent service into the routine. KFS leads the way in rapid DNA profiling in the UK and will offer a same day service as standard. The era of waiting days or weeks for results is over. While you wait DNA is right here, right now and KFS is delivering this service as standard to all of its existing customers."

Paul continues: "We are on a journey and KFS is leading the way into the future of DNA profiling. In a few years, the vast majority of DNA testing will be generated away from a traditional forensic laboratory in real time and, like fingerprinting, 10 years ago, will become a routine biometric tool in the arsenal of law enforcement. Identity checks using DNA will be carried out alongside fingerprinting as a matter of routine. KFS is proud to be driving a paradigm shift in DNA profiling terms, for the benefit of law enforcement and law-abiding citizens of the UK."

Eastern Region Contract Success

We were delighted to receive the news recently that we will be continuing to work with the Eastern Region forces, with whom we have built very positive working relationships over the last few years.

We will maintain our service to these contracted customers from our Norwich hub, from where, the region will be able to take full advantage of our 'while you wait' DNA service, described previously. This represents one of a number of exciting new services which will be delivered from our Norwich site during the next 12 months.

Commenting on this contract success, Eastern Region Account Manager, Craig Bennett said:

"I am very pleased with the outcome of the Eastern Region re-tendering exercise. It is a great reflection not only of the effort the KFS team has put into delivering a top quality service, but also the positive working relationship KFS has with the Eastern Region. I look forward to working more closely with each of our customers and cementing KFS' status within the region."

A much needed DNAboost!

In acknowledgement of customer demand, we have recently launched our DNAboost service which is now available to all customers, if they require it.

DNAboost was originally developed by the Forensic Science Service in 2009 and has now been re-engineered and re-launched by the National DNA Database®. It is now much cheaper and much faster and as an intelligence tool, is ideally suited to aiding the investigation of cold or un-solved cases, where DNA mixtures may be present in preserved exhibits.

DNABoost allows all possible allele combinations (mixtures) to be expertly interpreted by our DNA staff and then searched speculatively against the National DNA Database® (NDNAD).

A good example of the use of DNAboost is the recovery of DNA in equal amounts from a cigarette butt – using DNAboost it is possible to separate out the mixtures and identify two individuals from them.

The types of DNA mixture that can only be searched through DNAboost are those which have not been able to be resolved into individual DNA profile contributions. As such, a result may have previously been considered to be uninterpretable for NDNAD searching. Examples include:

- **A two person mixture where no clear major profile is present**
- **A complex mixture of more than two contributors**
- **A low level mixture where no major profile can be interpreted**
- **A poor quality mixture where some loci are partial or absent**
- **A heavily masked minor contributor**

It is anticipated that DNAboost will be used in cases where there is no practical ability to progress the case by other means. DNAboost searching may be applied in a variety of forensic casework where a mixture has been obtained which cannot be searched as a non-routine speculative search. In a large number of cases, other avenues may be preferential, such as examining further items in a case, attempting further DNA profiling activities or concentrating on more robust evidence types which may be available.

DNAboost is currently able to search both SGM+ and DNA-17 DNA profiles.

Further Information
For Further information on DNAboost or for guidance on the suitability of a case please contact your KFS Account Manager.

Spotlight

on our Digital Services Team

KFS established its Digital Services team in 2006, and from early on it has specialised in providing expertise in the areas of Forensic Image Analysis and Enhancement.

We have a dedicated team of Image Analysis specialists who are accustomed to working on some of the most high profile prosecution and criminal defence cases. Our experts are trained to the exacting standards set by The Law Enforcement and Emergency Services Video Association (LEVA) in America and regularly attend LEVA training courses to maintain their knowledge and expertise.

LEVA Law Enforcement & Emergency Services Video Association International, Inc.

The team is also the only body of forensic imaging practitioners in the UK to complete formal training, accredited by The United Kingdom's Chartered Society of Forensic Sciences (CSoFS).

Meet the Team

John Kennedy, MCSFS
Head of Department

Heading up the Coventry-based team is John Kennedy. John served as a Police Officer in the 1970's and worked closely with security services, both in the development and as an operative in covert image acquisition and analysis. During his police career, John received a number of commendations for outstanding police work and bravery.

Having retired as a result of illness after 10 years service; John set-up his own forensic imaging company and offered forensic video and audio analysis services to UK Law Enforcement Agencies. During this time, he helped to pioneer a number of processes involving high level comparison and Reverse Projection work.

John attended training in Forensic Video Analysis at the FBI Academy at Quantico and at the University of Indianapolis. His company became the UK's leading authority in forensic imagery and undertook work on some of the world's highest profile cases. His company was acquired by the UK Government owned Forensic Science Service (FSS) in 2006 and John remained as a Consultant Forensic Scientist until August 2008.

John is a professional member of CSFS and heads up the KFS team, he is actively involved in many of its high profile cases, such as the investigation into the Sri Lanka killing fields and the crimes committed by Boko Haram in Nigeria. He is also retained by the coroner on behalf of all 96 families in the on going Hillsborough inquest.

Steven Lamb, BSc (Hons), MCSFS
Digital Services Team Leader and Reporting Manager

Steve holds a Bachelor of Science Degree with Honours in Applied Science and is a Professional Member of the Chartered Society of Forensic Sciences, a member of the British Association of Human Identification (BAHID), the Forensic Image Analysis Group (FIAG) and the Law Enforcement and Emergency Services Video Association (LEVA). Steve is a LEVA Certified Forensic Video Technician and an A+ Certified Professional IT Technician.

After beginning his career with the FSS in 2000 in DNA, Steve's career path took a different turn in 2004, when he joined the eForensics Unit at the FSS specialising in the extraction, examination and analysis of data from mobile phones, PDA's, Sat-Navs and memory cards.

Steve joined KFS in 2009 as a Reporting Manager in the Digital Forensics Unit. Training as a Forensic Image and Video Analyst and successfully completing a number of formally assessed specialist courses in the UK and at the University of Indianapolis, USA.

Topics studied include; Forensic Video Analysis & the Law, Processing Digital Multimedia Evidence, Digital Video Recorder (DVR) Byte Level Analysis, DVR Advanced Byte Level Analysis, Photographic and Video Comparison, Forensic Imaging Techniques and Advanced Forensic Video Analysis.

Steve is Lead Reporting Manger and Team Leader and has examined many hundreds of hours of CCTV imagery, produced many analytical reports and statements and has given Expert Witness Testimony in Criminal proceedings on many occasions in Crown and Magistrate Courts within the UK.

Jake Blythe, BSc (Hons), MA, MCSFS
Reporting Manager

Jake holds a Bachelor of Science Degree with Honours in Film Production Technology and a Master's Degree in Animation & Design. He is a Professional member of the Institute of Engineering & Technology (IET) and the Chartered Society of Forensic Sciences (CSoFS) and a member of the British Association for Human Identification (BAHID) and the Law Enforcement & Emergency Services Video Association (LEVA).

Jake started at Key Forensic Services in 2011 as a Forensic Video Analyst before becoming a Reporting Manager in the Digital Forensics Department in 2014.

A LEVA Certified Forensic Video Technician, he has been trained in Forensic Image and Video Analysis and has examined hundreds of hours of CCTV footage and undertaken hundreds of examinations comparing facial, clothing and object characteristics.

Training has included practical training in Video and Image Analysis and forensic best practices as well as intensive study and formal assessment at the University of Indianapolis, USA in Forensic Video Analysis & the Law, Digital Multimedia Evidence Processing, Forensic Imaging Techniques, Photographic & Video Comparison and Advanced Forensic Video Analysis & the Law.

Selina Blinkhorne, MCSFS
Forensic Scientist

Selina is a Professional member of the Chartered Society of Forensic Sciences and the Law. Enforcement and Emergency Services Video Association (LEVA). She is a LEVA certified Video Technician.

Selina joined the FSS in 2004 in the DNA unit, progressing to a DNA Analyst role, where she became a Lead Coach, Technical Trainer and Quality representative for the department.

In 2012, Selina joined KFS as a Forensic Scientist in the Digital Services Team, specialising in Image and Video Analysis. Selina has successfully completed the LEVA Level 1 and Level 2 specialist courses at the University of Indianapolis and is now a LEVA certified Forensic Video Technician.

Selina has examined and converted many hours of CCTV footage and has produced detailed reports and statements to aid the Reporting Managers in their cases.

"Finding that missing piece of the jigsaw provides me with a great sense of achievement."

The KFS team has very strong links with

LEVA Law Enforcement & Emergency Services Video Association in the USA.

The United Kingdom's Chartered Society of Forensic Sciences (CSoFS) invited LEVA to its annual conference in Leicester on November 7, 2014. The invitation was to begin discussions on creating a partnership for the delivery of training leading to formal accreditation in Forensic Video Analysis in the UK.

All UK practitioners in video analysis are now required to achieve accreditation by October 2017. It is proposed that CSoFS and LEVA develop a program that fills a training gap that meets the requirements of the UK's Criminal Justice System. John Kennedy is LEVA's International Training Strategy Programme Manager.

Specialist Services offered by the KFS team:

The team offers a wide range of Forensic Image and Video Analysis services, which range from purely technical functions such as demultiplexing, transcoding, slowing and enlarging to complex interpretive analysis such as reverse projection / reconstructions, height calculation, facial comparative analysis, object analysis/comparison and event analysis to name but a few.

If there is imagery or video evidence involved in a case the chances are the team can help.

The team encourages investigators to have a case conference with them before any work is undertaken. There is no charge for this, as it is important to discuss the case in some detail in order to offer advice around the options which are most likely to generate meaningful results and be most cost-effective.

Bryan Ash
BSc (Hons) Combined Science. MSc. Dip Computer Science
Forensic Scientist

Brian first joined the FFS (Birmingham Laboratory) in 2001 as an Assistant Forensic Scientist in the Evidence Recovery Unit. In 2004 he became a Digital Technical Analyst in the newly established eForensics unit, where he forensically examined mobile phones, and other storage media, including Sat Navs and Memory Cards. During this time, Brian became a Trainer and Technical Checker for Mobile Phone, Voicemail and Memory Card examinations.

In 2014 he joined KFS as a Forensic Scientist in the Digital Department, primarily working on the acquisition and recovery of data for use in forensic Image and Video Analysis.

Brian holds a Diploma in Computing (Open University), and can apply his programming skills when required. He has successfully completed the LEVA Introduction to Byte Analysis course at the University of Indianapolis, Indiana, USA.

Topics included recovery of data using hex analysis tools.

Brian has examined and converted many hours of CCTV footage and has converted data of suitable format and produced detailed reports to aid other Forensic Scientists and the Reporting Managers in their cases.

"Forensics is problem-solving and that is something I enjoy enormously."

Follow us on Twitter
@KeyForensic

Connect to us on LinkedIn

Forensic Image and Video Analysis services:

- **Demultiplexing**
- **Transcoding**
- **Slowing**
- **Enlarging**
- **Tracking**
- **Image and video annotation**
- **Footage synchronisation**
- **Image and video authenticity assessment**
- **Data recovery**
- **Byte level analysis**
- **Reverse projection / reconstruction**
- **Facial comparative analysis**
- **Clothing analysis/comparison**
- **Vehicle analysis/comparison**
- **Object analysis/comparison**
- **Height calculation**
- **Photogrammetry**
- **Event analysis**
- **Chronology/timeline production**
- **Evidence presentation**
- **Peer review of Expert reports**
- **Pre-trial advice and briefing**
- **Courtroom Presentation Service**

What our Customers say:

"It is without doubt that the forensic work conducted on Operation Aragon by yourself and KFS was significant in ensuring guilty pleas in this case and has negated a lengthy and costly trial"

- DS, Norfolk Constabulary

"Both the High Court Judge and the Chief Constable of North Wales Police have commended the work done on CCTV in this case. Key Forensic Services Ltd provided an excellent service which was professionally presented "

- DC, Major Crime Team, North Wales Police

"Following the conclusion of the trial I was commended by His Honour Judge Milmo QC for my evidence presentation. In my opinion this would not have been possible without the aid of a thoroughly professional CCTV Court presentation produced by Steve and his team. Following a 10 week trial the six males accused of Mr Laskowska's murder were found guilty and given life sentences totaling 105 years"

- DC, Derbyshire Constabulary

"The whole case was reliant on CCTV evidence as there was no forensic evidence whatsoever….

….I received a Judges commendation for my part in the investigation. I have accepted this reluctantly as we all know one person does not solve a crime, without your help I have no doubt that I would have not received the commendation and without all your help I very much doubt a conviction for murder would have been reached"

- DC, Lincolnshire Police

"The level of service I received and the quality of work that was produced was simply first class. Not only was your report comprehensive, thorough and clear, your assistance in conference and during the proceedings made an enormous difference to the quality of the case we were able to present"

- Senior Counsel