

News story: Information content in data: How a Dstl project could find the 'needle in the haystack' using AI for image search

Academics are 'breaking new frontiers' in the latest UK-US collaboration on fundamental research into man and machine.

Dstl has invested £6million over 5 years in projects which bring together world-leading scientists from top universities such as Oxford and Stanford to look at ground-breaking research for defence – very early innovations which could one day change how we interact with machines and artificial intelligence.

The collaboration with the US Department of Defense and the Engineering and Physical Research Council is worth a total of £24 million for 4 projects – sharing the burden of funding, facilities and capabilities across the three organisations.

The latest study, under the Multidisciplinary University Research Initiative, or (MURI), addresses the problem of large data sets being expensive to collect, process and store. Having an understanding of how useful a set of data is before deciding to collect or process it could save time and money for counter-terrorist or military operations.

Experts have described the technology as being able to help security services find 'a needle in a haystack.' At a meeting of academics at Imperial College, London, Rene Vidal, from John Hopkins University in Maryland, said:

We are teaching the machine to answer the questions, and to interpret the answers. Take the London subway bombing. Who did it? Think about the videos of all London stations, who entered, who didn't. Forensics specialists looked at that data for weeks, but a computer could pick out the important pieces of data.

The computer could identify which video footage is important, and find the perpetrator. Hours and hours of video, data or text could be assessed in minutes, rather than weeks.

Paul Thomas, technical expert in Data Fusion, and the technical partner for the project from Dstl, said:

This research is fundamental, as it gives us the understanding of the real value of data for a decision. All too often the desire is to hoover up all data we can get without understanding how it

helps. This creates processing, communication and storage bottlenecks. This project will enable us to, for the first time, make choices about what data is important. A bit like a spam filter for our sensors.

Other MURI projects include a plan to develop machines which can understand human needs and values, can interact with humans effectively, and can 'see' using cognitive reasoning. Another is looking at how humans can communicate with computers which could aid decision-making in stressful environments, like the battlefield.

Dstl's Emerging Technology for Defence programme manager, Rob Baldock added:

Any emerging areas, we need to know and understand, so we can be an intelligent customer. Sometimes it's not about exploitation, it's about knowledge. MURIs are an excellent example of burden-sharing between the UK, the US and research councils. They offer value for money for Dstl. The return on investment is huge. If you don't look after the day after tomorrow, you'll never be ahead of the curve.

The Defence Science and Technology Laboratory (Dstl) and The Engineering and Physical Research Council EPSRC are jointly funding collaborative research projects with the US DOD under their Multidisciplinary University Research Initiative (MURI).

[Press release: We're urging ex-forces personnel to join our ranks](#)

We're calling on ex-military personnel to consider a career in roads – after being rewarded for our work supporting people coming out of the armed forces.

[Press release: We're urging ex-forces personnel to join our ranks](#)

We've been given a prestigious award by the Ministry of Defence for our continued commitment to inspiring and supporting both veterans and reservists. The award is given to employers who support defence and inspire

others to do the same.

It was presented to company representatives Royal Naval Reservist Lieutenant Commander Robert Jaffier, now an asset and resource manager, and Ron Calderwood-Duncan, Head of Engagement and Culture Change.

Robert, who nominated the company, said:

I am delighted that the hard work carried out by Highways England to recognise the achievements and skills of ex-military personnel has been recognised.

In practical terms, Highways England appeared a good fit for me to be able to continue my civilian career while pursuing my personal development as a reservist.

The main challenge was settling back down to civilian life from my time out on operations and become reacquainted with the culture of the business that had evolved while I was away. So, it's great that my workplace offers successful applicants a buddy who is someone who has experienced making the transition from military life to working for Highways England. I am delighted to offer my support as a buddy for new recruits, and I urge anyone from the forces looking for a career change to consider Highways England.

The Ministry of Defence makes awards under its Defence Employer Recognition Scheme. Employers have to show their values are aligned with the Armed Forces Covenant.

Since signing the Armed Forces Covenant in June 2017, we've actively been supporting leavers from the Armed Forces reintegrate into civilian careers, and to help operate, maintain and improve motorways and major A roads in England.

We launched an ex-military recruitment programme earlier this year which incorporated an insight day for service leavers to find out more about how it works, and the roles it can offer. It employs and supports both reservists and veterans, with up to 10 days paid special leave for reservists to attend military-related training.

There are many career routes available, from working on major projects or support functions such as HR finance and IT through to hands-on operational roles running the everyday traffic operations.

You can search and apply for jobs at Highways England via our [careers webpage](#).

You can also read the [Armed Forces Covenant promise in full](#).

General enquiries

Members of the public should contact the Highways England customer contact centre on 0300 123 5000.

Media enquiries

Journalists should contact the Highways England press office on 0844 693 1448 and use the menu to speak to the most appropriate press officer.

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[Press release: Criminal exploitation and 'county lines': learn from past mistakes, report finds](#)

A report published today finds that local agencies must learn lessons from past sexual exploitation cases to respond to 'county lines' and other child criminal exploitation.