[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.
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> 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).