



A TRIBUTE TO STEVEN SPIELBERG

Do you remember the *Minority Report*? This science fiction has been penned in 1956 by Philip Dick and adapted to the silver screen in 2002 by Steven Spielberg. The main actor was Tom Cruise. It tells the story of a future society where murders are prevented through the efforts of three mutants who can see the future. Closer to us, if you have seen *G.I. Joe: Retaliation* (2013), starring Dwayne Johnson and Bruce Willis, do you remember the scenes which depict camera-carrying flies (which could also explode)?

Notwithstanding the fact that most of us consider such film excerpts as pure science fiction, the Department of Homeland Security (US) has developed the **Future Attribute Screening Technology** (FAST) programme. Its primary aim is to detect crimes in sensitive areas, example, airports, by screening people for “psychological and physiological indicators” including heart rate, skin temperature, breathing, facial expression, body movement, pupil dilation, and other “psychophysiological/behavioral patterns” to stop “unknown terrorists”.

Indeed, security has made great advances. The development of **Hybrid Insect Micro-Electro-Mechanical Systems** (HI-MEMS) is a project of the US Department of Defense. The primary goal is to developing machine-insect interfaces by placing micro-mechanical systems inside the insects during the early stages of metamorphosis in order to exert control over the insect’s locomotion. The reason why the electronic system is attached during the early stage of metamorphosis is that the majority of tissue development in insects occurs in the

later stages of metamorphosis. Thus the renewed tissue growth around the MEMS will tend to heal and form a reliable and stable tissue-machine interface.

Skipping to the medical field, the FDA has recently given the green light to a piece of technology, which until a couple of years ago, similarly to the above technologies, was expected to hail from a *Star Trek* episode. FDA has approved the Proteus Digital Health’s new chip-embedded capsules which can report back to a sensor and your smartphone when medications have been ingested. The tiny silicon-based chips are no larger than a grain of sand. When swallowed and exposed to digestive juices, those materials produce a slight voltage which can be detected by a special skin patch and relayed to a smartphone. It not only serves as a fool-proof reminder as to if and when you’ve taken the medication, but it also allows healthcare providers to know for sure if medication has been taken by a patient who has trouble caring for themselves. Indeed, Proteus Digital Health has partnered with NHS England and the UK Trade & Investment (UKTI) to investigate further whether its ingestible sensors - taken with medications - monitor more effectively whether NHS patients follow their medicines regime.

Wishing you a peaceful Christmas & health and happiness (and reason to appreciate both) in the forthcoming year. ❄️

Pan E. Hui