defence science institute
Creating Defence Science Research Networks for Australia

Expression of Interest

Robotics and Autonomy pitches to representatives of **US Defence Research Laboratories and DST Group**

Date: **6th-7th November, 2017** (Successful applicants will only need to attend 1/2 day of the program.)

Location: Adelaide CBD (venue to be confirmed closer to the event.)

Key Points of Contact:

Defence Science Institute contact: Associate Professor Regina Crameri

US Army's International Technology Center – Pacific, (ITC-PAC) Contact: Dr Robert Kania

Defence Science Technology Group contact: Professor Jason Scholz

Close Date: **Friday 13th October, 2017 by 5pm** (Melbourne time)

Submission: DSI.Info@defencescienceinstitute.com

Introduction

The Defence Science Institute (DSI) with the support of the US Army's ITC-PAC and DST Group would like to solicit interest of any academic(s) and industry that have an interesting/novel research in the areas of interest (see below) to apply and present their research and research aspirations to representatives from the US DoD and DST Group for potential collaboration, cooperation and support opportunities.

Organisations represented will be:

- US Army Research , Development and Engineering Command (RDECOM)
- US Army Tank Automotive Research, Development and Engineering Center (TARDEC)
- US Army Armaments Research, Development and Engineering Center (ARDEC)
- US Army Aviation and Missile Research, Development and Engineering Centre (AMRDEC)
- US Army Research Laboratory (ARL)
- US Army Test and Evaluation Command (ATEC)
- US Army Computer and Electronics Research, Development and Engineering Center (CERDEC)
- US Army Edgewood Chemical and Biological Center (ECBC)
- Air Force Research Labs (AFRL)
- Air Force Office of Scientific Research (AFOSR)
- Office of Naval Research – Global (ONR-G)
- Space and Naval Warfare Systems Command (SPAWAR)
- Defence Threat Reduction Agency (DTRA)
- National Institute of Standards and Technology (NIST)

Submission of EOI

You are invited to provide a brief description of your work (maximum One A4 page, 12 pt font) and if possible, how this work may impact Defence into the future. If your paper is selected, you will be invited (at own expense) to present at this event.

Presentation Format

- **10 minutes** pitch/presentation by the presenting team
- **20 minutes** discussion with the US and DST delegation, this will be an unstructured open discussion around the topic presented, research cooperation and collaboration opportunities, future direction and envisaged issues.
- Due to the envisaged number of presentations and limited space, presenters will not be able to attend other presentations and discussions. A common briefing session will occur over the midday break when representatives from the US organisations will explain their research programs, international collaboration opportunities and research engagement strategies. All presenters are encouraged to attend this session to avoid loss of time during their individual sessions in non-core discussions

US Army's ITC-PAC and DST Group's Areas of interest

1. Sensing & Perception,
2. Platforms & Mobility,
3. Standards & Testing,
4. Networks & Communications,
5. Payloads,
6. Human Interfaces & Trust of autonomy/robotics,
7. Intelligence & Behaviours,
8. M&S/Development Tools,
9. Cyber Security, and
10. Supervised Autonomy for Armaments /Auto Tracking of Targets

Sample topics include:

- "sensing, perception, navigation, coordination, and decision making necessary for an autonomous vehicle to support the amphibious assault mission" ,
- "theory and algorithms for understanding surveillance imagery, for semantic search of visual datasets, and for autonomous agent perception",
- "unmanned amphibious vehicles",
- “Certification of Autonomous Systems”,
- "Challenges in the C4ISR domain for sustained operation of the autonomous system",
- "Automated spectrum management for operating autonomous system",
- "Novel technologies for tactical communication using robotics and autonomous system",
- "underwater communications for UUVs",
- "Certification of Autonomous Systems”,
- “Ethical and Legal Autonomous Systems”,
- "Human interaction/collaboration including understanding intent and actions of human team members, adversaries, and bystanders",
- "Trust and Transparency of Autonomous Systems",
- "Natural language understanding and generation",
- "Improved direct haptic manipulation",
- "Intuitive displays of the autonomous system state",
- "Understanding human-human and human-machine trust and teamwork",
- "Support shared situational awareness in learning and adapting to changing situations",
- "Advanced cognitive architectures to better align human and robot thought processes",

- "Scalable, self-organizing, survivable, organizational structure/hierarchy of heterogeneous UxVs appropriate to naval mission domains",
- "Autonomous learning, reasoning, and decision-making in unstructured, dynamic and uncertain environments",
- "Organic perception/understanding to support decision-making, reasoning and actions in a complex, dynamic world",
- "Quantifying the Mobility-Latency Trade-Off in Teleoperated UGVs", and
- "CBRN Threat Tracking & Mapping" ,
- **Other sample topics of interest:** synthetic biology, nanobiotechnlogy, biosensors, chem-bio detection; forensic chemistry and biology; systems biology.

Key Dates

6 October 2017 - Call for EoI
13 October 2017 – EoI submission deadline
17-25 October 2017 – Applications review by the US Army's ITC-PAC and DST Group
27 October 2017 – Announcement & Invitation
6-7 November 2017 – Pitch/Presentation in Adelaide

Please notes:

1. Applications submitted after 13th October 2017 deadline may be retained for consideration in subsequent funding rounds. For further information, please contact the DSI.
2. CV and or track record of the successful presenter(s) may be requested closer to the event.