

DAY ONE | WEDNESDAY 20 JULY 2022

7.30 am – 5.00 pm **REGISTRATION**

9.00 am – 10.50 am **OPENING PLENARY**

ROOM	GRAND BALLROOM
	Housekeeping Conference MC
	Welcome to Country CDS welcome
	Summit opening The 'Why'

9.50 am – 10.05 am **BREAK**

	TBC
	Professor Tanya Monro, Chief Defence Scientist Ms Heidi Shyu, Under Secretary of Defense for Research and Engineering (OUSDR&E), US Department of Defense Professor Dame Angela McLean, DBE FRS Chief Scientific Adviser, UK Ministry of Defence

10.50 am – 11.30 am **MORNING TEA**

10.50 am – 11.30 am **EPOSTER SESSIONS**

11.30 am – 12.45 pm **CONCURRENTS**

ROOM				
FACILITATOR / CHAIR				
	Artificial Intelligence for Defence Intro to AI This session sets the scene for the AI Theme in ADSTAR. How do we advance AI and its applications? What are the unique requirements and challenges of the Defence domain	Human & Defensive Biotechnologies	Resilience in Contested Environments	Command and Control Wargaming room An interactive and immersive command centre wargaming experience

12.45 pm – 2.00 pm **LUNCH**

12.45 pm – 2.00 pm **EPOSTER SESSIONS**

2.00 pm – 3.15 pm **PLENARY**

ROOM	DARLING HARBOUR THEATRE	
		Command and Control Wargaming room An interactive and immersive command centre wargaming experience

3.15 pm – 3.45 pm **AFTERNOON TEA**

3.15 pm – 3.45 pm **EPOSTER SESSIONS**

3.45 pm - 5.05 pm CONCURRENTS					
ROOM					
FACILITATOR / CHAIR					
	Artificial Intelligence for Defence Applications of, and Enabling AI This session covers specific applications of where AI might be employed to benefit Defence and frameworks to enable its application	Artificial Intelligence for Defence Assurance of AI This session addresses how AI might be assured, leading to trust in the systems embodying it	Human & Defensive Biotechnologies Military Relevance Presentations anticipating the implications of emerging biotechnology for the warfighter	Resilience in Contested Environments Agile Command and Control	Resilience in Contested Environments Battle Ready Platforms
	AI on the edge – Task-aware distributed deep learning inference for defense applications Dr. Surabhi Gupta, Safran Electronics and Defense Australasia	AI assurance and defence: what, why and how? Professor James Bailey, University of Melbourne		Data Fusion and Network Unreliability Dr. Trent Jansen-Sturgeon, STELaRLab - Lockheed Martin Australia	Understanding Navy deployment at sea: Qualitative study of demands, resources, recovery, and resilience during maritime opera Dr. Gavin Hazel, Macquarie University
	C-BDI – Multi-Agent software framework for building human-machine teaming applications Dr. Andrew Lucas, Agent Oriented Software	Flow-based Learning to Model Resilient Artificial Agents in Complex Environments Dilini Samarasinghe, University of New South Wales, Canberra		Goal-driven situational self-awareness and self-adaptation for agility and resilience Matt Selway, University of South Australia	Additive Manufacturing for Defence: Certification Framework and Leveraging Australia's Experts Keren Reynolds, Lockheed Martin Australia - STELaRLab
	Prospects for machine learning in adaptive behaviours of underwater vehicles Jack Delaney, Royal Australian Navy	Toward a Sovereign Capability in Artificial Intelligence for Australian Defence Dr. Jamie Sherrah, AIML		Monitoring and using contagious resilience to optimize team performance Dr. Ben Serpell, University of New England	
	Project Kosciuszko: Supporting deep decisions in AI-enabled command and control Aditya Ghose, University of Wollongong	Verification and Validation for AI Systems Dr. Emmanuel Blanchard, MathWorks		Exploring the augmented toolbox Dr. James Walsh, University of South Australia	
Command and Control Wargaming room. An interactive and immersive command centre wargaming experience					
5.00 pm - 7.00 pm WELCOME RECEPTION					

DAY TWO THURSDAY 21 JULY 2022							
7.00 am - 5.00 pm REGISTRATION							
7.00 am - 8.00am BREAKFAST SESSIONS							
ROOM							
9.00 am - 10.00 am PLENARY							
ROOM DARLING HARBOUR THEATRE							
Housekeeping Conference MC							
Resilient and Fortified Nations – Five Eyes Panel Professor Dame Angela McLean, DBE FRS Chief Scientific Adviser, UK Ministry of Defence Dr. David Galligan, Director, NZ Defence Technology Agency Ms Heidi Shyu, Under Secretary of Defense for Research and Engineering (OUSDR&E), US Department of Defense Professor Tanya Monro, Chief Defence Scientist							
10.00 am - 10.30 am MORNING TEA							
10.00 am - 10.30 am EPOSTER SESSIONS							
10.30 am - 11.45 am CONCURRENTS							
ROOM							
FACILITATOR / CHAIR							
Artificial Intelligence for Defence Applications of AI This session covers specific applications of where AI might be employed to benefit Defence and frameworks to enable its application		Artificial Intelligence for Defence Trust and Explainability This session discussed mechanisms to enhance trust in systems embodying AI. Specifically testing and explainability will be explored		Human & Defensive Biotechnologies Sovereign Biotechnology Introducing an alliance designed to build scale in the creation of sovereign capability to innovate across key areas of biotechnology		Resilience in Contested Environments Resilient Multi-Mission Space	
Model-Based Design for Deep Learning in SAR Target Classification Dr. Emmanuel Blanchard, MathWorks				Designing Spacecraft Constellations for Environmental Resilience Dr. Sholto Forbes-Spyratos, Defence Science and Technology Group		Command and Control Wargaming room. An interactive and immersive command centre wargaming experience	
The role of AI in High-Power-Laser Directed Energy tracking systems Dr. Jae Daniel, AIM Defence		Testing & Assuring AI – the role of Explainability Dr. David Hutber, QinetiQ		Spacecraft propulsion systems as a requirement for resiliency in satellite constellations. Dr. Patrick Neumann, Neumann Space			
Complexity to clarity: detecting, identifying and analysing complex materials with machine learning Professor Paul Pigram, La Trobe University		Building Trust with Autonomous Underwater Vehicles Donna Kocak, L3Harris		Artificial Intelligent Methods for Autonomous Spacecraft Resilient Manoeuvres Andoh Afful, RMIT University			
11.45 am - 12.00 pm BREAK							
12.00 pm - 1.15 pm CONCURRENTS							
ROOM							
FACILITATOR / CHAIR							
Artificial Intelligence for Defence Decision Making This session explores the use of AI for optimisation and decision making		Artificial Intelligence for Defence AI & Quantum Computing This session explores how the advent of quantum computing might enable and enhance AI		Human & Defensive Biotechnologies Human Biotechnologies - Investigation Emerging opportunities to push the boundaries of real time, individual status measurement and performance prediction		Resilience in Contested Environments Human Genomics and Personalised Medicine How will genomic analysis contribute towards aspects of human health and disease, and drug efficacy and safety?	
Artificial Intelligence assisted defence portfolio optimisation under uncertainty Dr. Hasan Turan, UNSW Canberra		Enabling AI military platforms at the edge through quantum computing Dr. Nariman Saadatmand, Quantum Brilliance				Resilience in Contested Environments Information Warfare	
				Grey Zone activity: measuring the resilience of social systems to influence operations Dr. Marian-Andrei Rizoiu, University of Technology Sydney		Resilience in Contested Environments Remote Undersea Surveillance	
						Over-the-air Trainable Radios for Resilient Communication in Contested Environments Dr. Ismail Shakeel, DSTG	
						Command and Control Wargaming room. An interactive and immersive command centre wargaming experience	

	Bayesian Inference for Validation of Combat Models from Time-Series Data						
	Robert Niven, The University of New South Wales						
	Causation-based AI to optimise ADF decisions						
	Chris Stecki, PHM Technology						
1.15 pm - 2.15 pm LUNCH							
1.15 pm - 2.15 pm EPOSTER SESSIONS							
2.15 pm - 3.30 pm CONCURRENTS							
ROOM							
FACILITATOR / CHAIR							
	Artificial Intelligence for Defence Human Autonomy Teaming This session explores the interface between operator and the machine and how the two might work together	Artificial Intelligence for Defence Workshop: Delivering asymmetric capabilities	Human & Defensive Biotechnologies Human Biotechnologies - Interpretation Translating the wealth of emerging data into actionable insights	Human & Defensive Biotechnologies In-Vitro Models Are fully functional in vivo-like tissue and/or organs, science fiction or science fact?	Resilience in Contested Environments Disruptive Weapons	Resilience in Contested Environments Quantum PNT	Command and Control Wargaming room. An interactive and immersive command centre wargaming experience
	Human factors: placing the human at the centre of AI development Dr. Leon Clark, Lockheed Martin Australia STELaRLab	Delivering asymmetric capabilities			Resilience Against Hypersonic Threats: Mobilising Australian University Expertise for Preparedness and Response Professor Allan Paull, The University of Queensland Professor Sean O'Byrne, University of New South Wales Professor David Buttsworth, University of Southern Queensland	Stellar Navigation as a resilient alternative to GNSS Joshua Critchley-Marrows, The University of Sydney	
	Contextually Situated Anomaly Detection Dr. Markus Wagner, The University of Adelaide			Advanced Integrated Respiratory (AIR) model: assessing chemical and biological aerosol hazards Dr. Damien Chong, Defence Science and Technology Group	Detection as Part of a Toolkit for Resilience from High Power RF Directed Energy threats Dr. Richard Hoad, QinetiQ Ltd	Positioning resilience in GPS- and comms-denied environments Professor Michael Milford, QUT	
	Extended Reality Training Simulators with AI-Driven Scenario Recommendation Irene Gironacci, Swinburne University of Technology	Andre Luiten, Managing Director, Quantx Labs Dr. Derek Rogers, Defence & Space Engineering Lead, Shoal Group James Palmer, CEO, Silentium Defence David Brittle, Director Mission Systems			An electromagnetic edge: how resilient superconducting devices can support operations in contested environment Dr. Jonathan Knott, University of Wollongong	Resilient Communications for LEO Satellite Operations in a Contested Environment Terence Chan, University of South Australia	
	Glossary generation for domain-specific corpora Dr. Christoph Treude, University of Melbourne						
3.30 pm - 4.00 pm AFTERNOON TEA							
3.30 pm - 4.00 pm EPOSTER SESSIONS							

4.00 pm - 5.20 pm CONCURRENTS

ROOM							
FACILITATOR / CHAIR							
	<p>Artificial Intelligence for Defence</p> <p>Optimality, Validity, robustness, explainability: you cant have it all This session commences with a talk on explainability for the EIC of IEEE Transactions of AI, Prof Hussein Abbass. This is followed by a robust discussion (Q&A style) around what is most important when considering the application of AI, and how we can be sure it will behave in the manner we think it will</p>	<p>Artificial Intelligence for Defence</p> <p>AI for Cyber & Information Warfare This session explores how the information processing capabilities of AI might be leveraged to provide a distinct advantage to Defence within the cyber domain</p>	<p>Human & Defensive Biotechnologies</p> <p>Human Biotechnologies - Intervention Turning insights into actions that deliver meaningful advantage to ADF warfighters across a range of competitive missions in challenging environments</p>	<p>Human & Defensive Biotechnologies</p> <p>Microbial Design Will designer microbes play a greater role in microbiological production and fermentation, pharmaceuticals, chemicals, food, and cosmetics?</p>	<p>Resilience in Contested Environments</p> <p>Human Performance</p>	<p>Resilience in Contested Environments</p> <p>Workshop: Cyber Hardening</p>	<p>Command and Control Wargaming room.</p> <p>An interactive and immersive command centre wargaming experience</p>
		<p>AI for Cyber Vulnerability Discovery</p> <p>Associate Prof Toby Murray, University of Melbourne</p>			<p>Educational escape rooms for next generation defence training</p> <p>Dr. Robert Ross, La Trobe University</p>		
		<p>CAGE: Advancing Autonomous Cyber Defence through Public Challenge Problems</p> <p>Toby Richer, Defence Science & Technology Group</p>			<p>How do we judge "resilience"?</p> <p>Dr. Li Jiang, Defence Science and Technology Group, Department of Defence</p>		
		<p>From human-centred to team-centred: designing cyber-human teams for decision superiority</p> <p>Lucy Parrington, La Trobe University</p>			<p>Human System Ethical Resilience in Contested Environments</p> <p>Associate Prof Deane-Peter Baker, UNSW Canberra</p>		
					<p>A Comprehensive Domain-analysis of Deployment Risks and Resources for Resilience and Job-Performance</p> <p>Associate Prof Monique Crane, Macquarie University</p>		

6.00 pm - 11.00 pm GALA DINNER

DAY THREE | FRIDAY 22 JULY 2022

7.00 am - 4.30 pm REGISTRATION

7.00 am - 8.00am BREAKFAST SESSIONS

ROOM	
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9.00 am - 10.00 am PLENARY

ROOM DARLING HARBOUR THEATRE

**Art of the possible
TBC**

10.00 am - 10.30 am MORNING TEA

10.00 am - 10.30 am EPOSTER SESSIONS

10.30 am - 11.45 am PLENARY

ROOM DARLING HARBOUR THEATRE

Creating Sovereign Industry

11.45 am - 12.00 pm BREAK

12.00 pm - 1.15 pm CONCURRENTS

ROOM					
FACILITATOR / CHAIR					
	Artificial Intelligence for Defence	Artificial Intelligence for Defence	Human & Defensive Biotechnologies	Resilience in Contested Environments	Artificial Intelligence for Defence
	AI for Cyber & Information Warfare	Workshop: Investigation of self-situating AI within uncertain environments	Human Biotechnologies Workshop - Research Ethics, Data and Consent		Tutorial: Workshop on Bayesian Inference in Defence Science
	Machine learning for cyber defence: From network data to resilient missions	Investigation of self-situating AI within uncertain environments			Workshop on Bayesian Inference in Defence Science
	Dr. Alexander Chambers, Defence Science and Technology Group				
	Modelling information warfare with artificial intelligence	Dr. Simon Ellis-Steinborner, Defence Science and Technology Group			Robert Niven, The University of New South Wales
	Associate Prof David Ormrod, University of South Australia				
	Thinking Ahead: A Neuro-Symbolic Generative Model with Self-explanations for Proactive Cyber Defence				
	Associate Prof Lina Yao, University of New South Wales				

1.15 pm - 2.15 pm LUNCH

1.15 pm - 2.15 pm EPOSTER SESSIONS

2.15 pm - 3.30 pm CONCURRENTS

ROOM				
FACILITATOR / CHAIR				
	Artificial Intelligence for Defence	Human & Defensive Biotechnologies	Resilience in Contested Environments	Human & Defensive Biotechnologies
	AI Wrap Up	Biotechnologies Workshop - Concepts to Capability	Panel: Digital Twins - what does the future look like?	Resilient Multi-Missions Space/SmartSat CRC Joint session

3.30 pm - 4.00 pm CLOSING PLENARY

ROOM DARLING HARBOUR THEATRE

**MC housekeeping
Closing statement from CDS**

CONFERENCE CLOSE