HUMS2021 Newsletter 7 — Keynote speakers and program update

This newsletter provides you with a copy of the HUMS2021 program and introduces you to the two HUMS2021 keynote presentations and their speakers.

Keynote 1
The first HUMS2021 keynote presentation, titled **CASG NX – Integrating Industry 4.0 for Defence**, will be given jointly by two speakers, the first is Squadron Leader Mike Maroney, who is the program manager for CASG Next Generation Acquisition and Sustainment - CASG NX. The second speaker is Mr Luke de Jager from KPMG. Luke is an Associate Director in KPMG'S Engineering, Assets and Project Delivery Advisory, and is the Lead Reliability Engineer and Data Analyst for CASG NX.

Their joint keynote presentation will be about the implementation of several Industry 4.0 initiatives for CASG including an approach to implementing AI at speed and scale known as Adaptive Collaboration and Augmented Intelligence (ACAI). ACAI is enabling the accelerated translation of DSTG research in fleet plan optimisation into the Defence Information Environment that is accessible by maintenance and engineering staff.

You can read more about Mike and Luke on the Congress website: Mike Moroney, Luke de Jager.

Keynote 2
The second HUMS2021 keynote presentation, titled **Enterprise PHM Digital Thread Concepts & Opportunities**, will be given by Mr Thomas Dabney, who is the Prognostics and Health Management Lead, US Naval Air Systems Command. The presentation will cover platform PHM digital concepts including holistic lifecycle requirements for an integrated platform health capability.

HUMS2021 Program
The HUMS2021 program is out. A condensed version showing the HUMS program and AIAC plenary sessions is at the bottom of this PDF. The complete AIAC, HUMS & ACAM program is available to download from the congress website: https://www.aiac.com.au/program. The HUMS program is identified in the complete program by the amber coloured background to the session headings.

HUMS2021 will be a live virtual event, accessible only through a web browser. You can register at https://www.aiac.com.au/registration.

HUMS2021 Chair: Ms Joanna Kappas from DST Group.

HUMS2021 Gold Sponsor: ETMC Technologies https://etmc.com.au

We look forward to seeing you online.
HUMS2021 Committee

HUMS2021 Website: https://www.dst.defence.gov.au/event/hums-2021

HUMS2021 Past Papers: https://www.humsconference.com.au/Papers.html

HUMS2021 social media posts will come from the **Defence Science** accounts below, so to follow, subscribe etc.:

https://twitter.com/DefenceScience

https://www.youtube.com/user/DSTOvideo

https://au.linkedin.com/company/defence-science-and-technology-group

https://www.instagram.com/defencescience

The hashtag **#HumsConf** is also still able to be used to join the conversation.

Mailing List Self-Management Instructions

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If you received this email in error or no longer have interest in this field, please accept our apology.

The 12th International Conference on Health and Usage Monitoring (HUMS)

with 19th Australian International Aerospace Congress (AIAC) (including Space), and 10th Australasian Congress on Applied Mechanics (ACAM)

HUMS Conference program only below

Program times in AEDT (UTC+11) as per Melbourne, Australia

AEDT	Day 1 Monday, 29 November 2021	Day 2 Tuesday, 31 November 2021	Day 3 Wednesday, 1 December 2021
08:45	AIAC & ACAM Joint Welcome (5 mins) Amanda Caples (10 mins) Victorias Lead Scientist		
09:00 09:20	**AIAC PLENARY** Boeing's Australian autonomous new product development **Ms Emily HUGHES (Boeing)**	**AIAC PLENARY** Artemis Program Update **Mr Greg CHAVERS (NASA)**	
09:40 10:00	**AIAC PLENARY** The Australian Space Agency: objectives and priorities for the future **Mr Enrico PALERMO (Australian Space Agency)**	**AIAC PLENARY** Evolution of Military Aviation Regulations and Aviation Safety. A recent chronology of where we have come from & why, current work and future challenges. **AIRCDRE Joe MEDVED (DASA)**	**AIAC PLENARY** Focusing Our National Science and Technology Enterprise: Creating Impact Through Defence Science **Dr Katerina AGOSTINO (DST Group)**
10:20	Morning Tea (20 mins)		HUMS events of day 3 events continued overleaf
10:40	***Diagnostics & Prognostics 1***	***Structural Health Monitoring / Sensors & Algorithms***	
10:40	**HUMS KEYNOTE** CASG NX - Integrating Industry 4.0 for Defence **SQNLDR Mike MORONEY** **(CASG, Department of Defence) and** **Luke de Jager (KPMG)**	**HUMS KEYNOTE** Enterprise PHM Digital Thread Concepts & Opportunities **Tom DABNEY** **(PHM Engineering)**	
11:10	An approach to merging machine learning models in an ensemble for load estimation **Ms Catherine CHEUNG** **(National Research Council Canada)**	Frictional heating as an estimator of modal damping and structural degradation – a vibrothermographic approach **Prof Nick LIEVEN** **(University of Bristol)**	
11:30	Alternative Approaches for Health Assessment of Vehicle Subsystems **Mr Kavindu RANASINGHE** **(RMIT University)**	Multi-Impact Force Identification on Aircraft Composite Structures using Operational Modal Analysis **Mr Morteza PAYAB** **(RMIT University)**	
11:50	Is Deep Learning Superior in Machine Health Monitoring Applications **Dr Wenyi WANG** **(DST Group)**	Passive phased array acoustic emission localisation via recursive signal-averaged Lamb waves with an applied Warped Frequency Transformation **Mr Luke POLLOCK** **(UNSW Canberra)**	
12:10	Categorical outlier detection for Health Usage and Monitoring Systems **Mr Leonard WHITEHEAD** **(DST Group)**	Validation of optimised vibration energy harvesters under near operational conditions **Mr Jess FLICKER** **(DST Group)**	
12:30	An Overview of ADF Wear Debris Analysis **Dr Andrew BECKER (DST Group),** **Mr Paul NOCEJA (DASA)**	A wireless accelerometer for in situ gearbox condition monitoring of rotating components **Dr George JUNG** **(DST Group)**	
12:50	Lunch Break (40 mins)		
13:30	***HUMS Data Analytics***	***Platform Asset Management***	
13:30	Aircraft Systems Prognostic Health Ontology **Dr Richard de ROZARIO** **(University of Melbourne)**	Optimal plans and policies for the management of military aircraft fleets **Dr David MARLOW** **(DST Group)**	
13:50	Operation Mode determination and Regime-based anomaly detection using Unsupervised methods **Mr Navid ZAMAN** **(PHM Technology)**	A Study on Fleet Agnostic Health Usage and Monitoring System for Bridging Assets **Mr Steven KOULOUMENDAS** **(Anywise Consulting)**	
14:10	A hybrid method for degradation assessment and fault detection in rolling element bearings **Mr Yonatan NISSIM** **(Ben-Gurion University of the Negev)**	Deep Learning Airframe Load Prediction: A Data-Driven System for Aircraft Structural Health Management **Dr Haytham FAYEK** **(RMIT University)**	

14:30	Helicopter vibration-based operating regimes identification through the use of mixture models on health indicator **Mr Maxime MEUTERLOS** **(LVA, Université de Lyon)**
14:50	Afternoon Tea (20 mins)
15:10	***Diagnostics & Prognostics 2***
15:10	Towards fault diagnosis of spur gears using Fiber Bragg Grating (FBG) strain sensors **Mr Lior BACHAR** **(Ben-Gurion University of the Negev)**
15:30	Novel approach for the estimation of transfer functions using a realistic dynamic model of gear and in-out zeros technique **Mr Omri MATANIA** **(Ben-Gurion University of the Negev)**
15:50	Deep One-Class Method for Helicopter Anomaly Detection based on Cyclic Spectral Analysis **Chenyu LIU** **(KU Leuven)**
16:10	HUMS events of Day 1 ended

HUMS events of Day 2 ended

HUMS events of Day 3 continued

16:40	**AIAC Closing and Awards Ceremony**
17:20	END