



**AGENDA**  
**SET-277 Inter-Panel / Inter-Group Workshop**  
**on**  
**“Phenomenology and Exploitation of Hyperspectral Sensing**  
**within NATO“**

**14-15 October 2019 – Royal Military Academy, Brussels, Belgium**

<b>Monday, 14 October 2019 , 8:30 – 19:00</b>	
8:30- 9:30	Registration
9:30 - 09:55	Welcoming words
09:55 – 10:40	<b>Key note speaker:</b> <b>Towards improving physical and statistical models in target detection</b> Stefania Matteoli National Research Council of Italy, Italy
<b>10:40 - 11:00</b>	<b>Break</b>
11:00 – 12:40	<b>Session 1: Spectral based target and anomaly detection</b>  <b>Anomaly detection in hyperspectral LWIR imagery using autoencoders</b> Maria Axelsson, Niclas Wadströmer, David Gustafsson, Henrik Petersson and David Bergström Swedish Defence Research Agency (FOI), Sweden  <b>Application of some Blind Source Separation Methods on Hyperspectral Data for Anomaly Detection</b> Özgür Murat POLAT ASELSAN-MGEO, Turkey  <b>Analysis of the spectral variability of the target reflectance</b> Martin Levesque Defence Research and Development, Canada  <b>Target Rediscovery on Long-wave Infrared Hyperspectral Images using Radiance and Emissivity Data</b> Alper Koz, İlke Belenoğlu, Esen Yüksel and A. Aydın Alatan Center for Image Analysis, Electrical and Electronics Engineering, Middle East Technical University and Hacettepe University, Turkey.



<b>12:40 - 13:30</b>	<b>Lunch</b>
13:30 – 15:10	<p><b>Session 2: Target detection in longwave hyperspectral imaging</b></p> <p><b>Comparison of Longwave Infrared Hyperspectral Target Detection Methods</b> Seung Hwan An, Nathan P. Wurst, Joseph Meola Air Force Research Laboratory, USA</p> <p><b>Comparing algorithms for detecting and identifying targets composed of spectral mixtures using commercial airborne hyperspectral long-wave infrared instruments</b> Dennis C. Duro, Eldon Puckrin AEREX Avionics Inc., Defence Research and Development, Canada</p> <p><b>Detection of Disturbances in Gravel Areas using LWIR Airborne Hyperspectral Data</b> Alwin Dimmeler Fraunhofer Institute of Optronics, System Technologies and Image Exploitation IOSB, Germany</p> <p><b>The impact of thermal shadowing and proximal heating on target detection and identification performance in the longwave infrared</b> Dennis C. Duro, Eldon Puckrin AEREX Avionics Inc., Defence Research and Development, Canada</p>
<b>15:10 – 15:30</b>	<b>Break</b>
15:30 – 17:10	<p><b>Session 3: Hyperspectral imaging of camouflage and coating</b></p> <p><b>Hyperspectral imaging using a continuous variable bandpass filter</b> Jörgen Ahlberg and Ingmar Renhorn Glana Sensors AB, Computer Vision Laboratory - Linköping University, Sweden</p> <p><b>Countermeasure of Multispectral Camouflage Nets to Imaging Spectroscopy</b> Santiago A. Rodriguez, Michal Shimoni, Javier Plaza, Antonio Plaza, Ingmar Renhorn, Jörgen Ahlberg and Marijke Vandewal Hyperspectral Computing Laboratory, University of Extremadura, Spain; Signal and Image Centre, Belgian Royal Military Academy, Belgium; National University of Cordoba (UNC), Argentina; Glana Sensors AB, Sweden; Computer Vision Laboratory, Linköping University, Sweden.</p> <p><b>Hyperspectral polarimetric measurements of camouflage prototypes deployed in semi-desertic environments</b> Daniel A. Lavigne Defence Research and Development, Canada</p>



	<p><b>Analyzing Reflectance Data for Various Black Paints and Coatings</b> Mimi Huynh US Army Night Vision Lab, USA</p>
<b>17h10– 19:00</b>	<b>Welcoming cocktail reception</b>
<b>DAY-2</b>	
<b>Tuesday, 15 October 2019 , 9:00 – 17:00</b>	
09:00 – 09:45	<p><b>Key note speaker:</b> <b>Physics-based machine learning for detecting changes and targets in spectral imagery</b> Amanda K. Ziemann, Los Alamos National Laboratory, USA</p>
<b>09:45 - 10:05</b>	<b>Break</b>
10:05 - 12:10	<p><b>Session 4 – Advanced processing techniques for hyperspectral imaging</b></p> <p><b>Spectral classification and change detection for hyperspectral imaging</b> Nanda van derStap, Rob J. Dekker and klamer Schutte TNO, Netherlands</p> <p><b>Registration methods via 3D-2D Conversions for Long-wave Infrared Hyperspectral Images</b> Alper Koz a and A. Aydın Alatan Center for Image Analysis, Electrical and Electronics Engineering, Middle East Technical University, Turkey</p> <p><b>Liquid contaminant detection with unpolarized and polarized LWIR hyperspectral measurements</b> Gilles Fortin Defence Research and Development, Canada</p> <p><b>Detecting IEDs and UXOs in hyperspectral remote sensing imagery using generative machine learning models</b> Aksel Aide, Eilif Solberg and Ingebjorg Kasen Norwegian Defence Research Establishment (FFI), Norway</p> <p><b>Leveraging High Performance Hyperspectral Sensors for the Conservation of Masterworks</b> Jason .G. Zeibel US Army Night Vision Lab, USA</p>
<b>12:10 – 13:00</b>	<b>Lunch</b>



13:00 – 14:40	<p><b>Session 5 – Detection of soft target using hyperspectral imaging</b></p> <p><b>Real time Gas quantification using Thermal Hyperspectral Imaging: Ground and airborne applications</b> Stéphanie Doz and Pierre-Yves Foucher ONERA, France</p> <p><b>Butane and Methanol Gas Detection by PNNL and Image Based Signatures</b> Şafak ÖZTÜRK Havelsan, Turkey</p> <p><b>Signature predictions of rocket motors</b> Sophie Ringuette, Rogerio Pimentel, Robert Stowe, Pierre Fournier and Derrick Alexander Defence Research and Development, Lloyd’s Register Applied Technology Group, Canada</p> <p><b>Liquid contaminant detection with ground-based and airborne LWIR hyperspectral measurements</b> Gilles Fortin Defence Research and Development, Canada</p>
14:40 - 15:00	<b>Break</b>
15:00 - 16:40	<p><b>Session 6: Advanced technology of hyperspectral imaging</b></p> <p><b>Recent Improvements on the Thermal Infrared Hyperspectral Images of the SIELETTERS Airborne System</b> O. Gazzano, Y. Ferrec, C. Coudrain and L. Rousset-Rouvière ONERA, France</p> <p><b>Assessment Methods and Evaluation of Camouflage in an Operational Context</b> Hans Kariis Swedish Defence Research Agency, FOI, Sweden</p> <p><b>Spatial registration and spectral reconstruction of a linear variable filtered hyperspectral camera</b> David Gustafsson, Maria Axelsson, Henrik Petersson and David Bergstrom Swedish Defence Research Agency (FOI), Sweden</p> <p><b>Standardization in hyperspectral imaging: The IEEE P4001 working group, and some examples of ongoing work</b> Torbjørn Skauli Norwegian Defence Research Establishment (FFI), Norway</p>



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16:40 – 17h00	Closing remarks and discussion