

## Unmanned Systems Technology XX

Tuesday - Thursday 17 - 19 April 2018

### Conference Sessions At A Glance

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**1:** Perception  
**2:** Special Topics  
 Posters-Tuesday  
**3:** Robotics CTA  
**4:** Navigation  
**5:** Collaborative Robotic Teams: Joint Session with conferences 10640 and 10651

### Important Dates

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Abstract Due:  
9 October 2017

Author Notification:  
11 December 2017  
Notifications will be sent no later than 12/15/17

Manuscript Due Date:  
21 March 2018

### Conference Committee

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#### Conference Chairs

Robert E. Karlsen, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States)

[Douglas W. Gage](#), XPM Technologies (United States)

Charles M. Shoemaker, U.S. Army Communications-Electronics Research Development and Engineering Command (United States)

[Hoa G. Nguyen](#), Space and Naval Warfare Systems Ctr. Pacific (United States)

#### Program Committee

[Jonathan A. Bornstein](#), U.S. Army Research Lab. (United States)

[Jared Giesbrecht](#), Defence Research and Development Canada, Suffield (Canada)

Program Committee continued...

[Larry H. Matthies](#), Jet Propulsion Lab. (United States)

Camille S. Monnier, Charles River Analytics, Inc. (United States)

[Paul L. Muench](#), U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States)

[Dilip G. Patel](#), General Dynamics Robotic Systems (United States)

Brian K. Skibba, U.S. Air Force Civil Engineer Ctr. (United States)

TUESDAY 17 APRIL

[Show All Abstracts](#)

### Session 1: Perception

Tuesday 17 April 2018

1:20 PM - 3:00 PM

Location: Ballroom Level, Naples 1

Session Chairs: Camille S. Monnier, Charles River Analytics, Inc. (United States) ; [Paul L. Muench](#), U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States)

#### Robust homing with stereovision

Paper 10640-2

Time: 1:40 PM - 2:00 PM

Author(s): Fuqiang Fang, Damian Lyons, Fordham Univ. (United States)


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#### Autonomous runway debris detection through deep learning

Paper 10640-4

Time: 2:00 PM - 2:20 PM

Author(s): John S. Harchanko, Polaris Sensor Technologies, Inc. (United States)


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#### Automated, near real-time inspection of commercial sUAS imagery using deep learning

Paper 10640-5

Time: 2:20 PM - 2:40 PM

Author(s): Chris Kawatsu, Benjamin Purman, Aaron Zhao, Andy Gillies, Mike Jeffers, Paul Sheridan, Soar Technology, Inc. (United States)


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#### Automated data interpretation, tasking, and coordination of UAS imaging (Conference Presentation)

Paper 10640-6

Time: 2:40 PM - 3:00 PM

Author(s): Sandra M. Klute, Evan M. Lally, Christopher Dusold, Cody McClintock, TORC Robotics, Inc. (United States)

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**Coffee Break 3:00 PM - 3:30 PM**

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**Session 2:  
Special Topics**

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Tuesday 17 April 2018

3:30 PM - 5:30 PM

Location: Ballroom Level, Naples 1

Session Chairs: [Douglas W. Gage](#), XPM Technologies (United States) ; Charles M. Shoemaker, U.S. Army Communications-Electronics Research Development and Engineering Command (United States)


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**A translation architecture for the Joint Architecture for Unmanned Systems (JAUS)**

Paper 10640-7

Time: 3:30 PM - 3:50 PM


Author(s): Scott Cutler, SPAWAR Systems Ctr. Pacific (United States)

[Add To My Schedule](#) **MAD-VR: machine learning, analysis, and design in virtual reality**

Paper 10640-8

Time: 3:50 PM - 4:10 PM


Author(s): Joshua Rubini, Naval Air Systems Command (United States)

[Add To My Schedule](#) **DRESH: DRone EnSnaring mesh**

Paper 10640-9

Time: 4:10 PM - 4:30 PM


Author(s): David Erickson, Matthew Serge, Doug Forrest, Defence Research and Development Canada, Suffield (Canada)

[Add To My Schedule](#) **blindBike: an assistive bike navigation system for low-vision persons**

Paper 10640-10

Time: 4:30 PM - 4:50 PM


Author(s): Lynne L. Grewe, William Overell, Chris Lagali, California State Univ., East Bay (United States)

[Add To My Schedule](#) **A game of timing with detection uncertainty**

Paper 10640-11

Time: 4:50 PM - 5:10 PM

Author(s): David Bednarz, Paul L. Muench, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States); Nicholas Krupansky, U.S. Army Tank Automotive Research (United States)

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**Session PS1:  
Posters-Tuesday**

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Tuesday 17 April 2018

6:00 PM - 8:00 PM

Location: Ballroom Level, Osceola Ballroom C

All symposium attendees – You are invited to attend the evening Interactive Poster Session to view the high-quality posters and engage the authors in discussion. Enjoy light refreshments while networking with colleagues in your field. Authors may set up their posters between 10:00 am and 5:00 pm the day of their poster session. Special daytime previewing prior to the session from 10:00 am to 5:00 pm. Attendees are required to wear their conference registration badges to access the Osceola Ballroom to view the posters.

Posters that are not set up by the 5:00 pm cut-off time will be considered no-shows, and their manuscripts may not be published. Poster authors should accompany their posters from 6:00 to 8:00 pm to answer questions from attendees. All posters and other materials must be removed no later than 8:30 pm. Any posters or materials left behind at the close of the poster session will be considered unwanted and will be discarded. SPIE assumes no responsibility for posters left up after the end of each poster session.


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**Automatic voice control system for UAV-based accessories**

Paper 10640-26

Time: 6:00 PM - 8:00 PM

Author(s): Filip Rezac, Jakub Safarik, Erik Gresak, Jakub Jalowiczor, Jan Rozhon, CESNET z.s.p.o. (Czech Republic)


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**Enabling intelligence with temporal world models**

Paper 10640-27

Time: 6:00 PM - 8:00 PM


Author(s): Philip R. Osteen, Jason L. Owens, Robert St. Amant, Christopher J. Robison, Brian Kaukeinen, U.S. Army Research Lab. (United States); Michael A. DiBlasi, Engility Corp. (United States)

[Add To My Schedule](#) **Stopped random walks and control of uncertain systems**

Paper 10640-30

Time: 6:00 PM - 8:00 PM


Author(s): Xinjia Chen, Northwestern State Univ. (United States)

[Add To My Schedule](#) **Confidence regions with applications to sensing and control**

Paper 10640-31

Time: 6:00 PM - 8:00 PM

Author(s): Xinjia Chen, Northwestern State Univ. (United States)

[Add To My Schedule](#) **WEDNESDAY 18 APRIL**[Show All Abstracts](#)**Session 3:  
Robotics CTA**

Wednesday 18 April 2018

8:30 AM - 10:10 AM


Location: Ballroom Level, Naples 1

Session Chairs: [Dilip Patel](#), General Dynamics Robotic Systems (United States) ; [Stuart H. Young](#), U.S. Army Research Lab. (United States)**Robotics collaborative technology alliance (RCTA) program overview**

Paper 10640-13

Time: 8:30 AM - 8:50 AM


Author(s): Stuart H. Young, U.S. Army Research Lab. (United States); Dilip Patel, General Dynamics Robotic Systems (United States)

[Add To My Schedule](#) **An experiment to evaluate robotic grasping of occluded objects**

Paper 10640-14

Time: 8:50 AM - 9:10 AM


Author(s): Arnon Hurwitz, Marshal Childers, U.S. Army Research Lab. (United States); Andrew Dombush, Dhruv Saxena, Maxim Likhachev, Carnegie Mellon Univ. (United States); Craig Lennon, U.S. Army Research Lab. (United States)

[Add To My Schedule](#) **Modeling and traversal of pliable materials for tracked robot navigation**

Paper 10640-15

Time: 9:10 AM - 9:30 AM


Author(s): Camilo Ordonez, Ryan Alicea, Florida State Univ. (United States); Brandon Rothrock, Jet Propulsion Lab. (United States); Kyle Ladyko, Mario Harper, Florida State Univ. (United States); Sisir Karumanchi, Jet Propulsion Lab. (United States); Larry Matthies, Emmanuel Collins, Florida State Univ. (United States)

[Add To My Schedule](#) **When does a human replan? Exploring intent-based replanning in multi-objective path planning**

Paper 10640-16

Time: 9:30 AM - 9:50 AM


Author(s): Meher T. Shaikh, Michael A. Goodrich, Brigham Young Univ. (United States)

[Add To My Schedule](#) **Parallel approach to motion planning in uncertain environments**

Paper 10640-17

Time: 9:50 AM - 10:10 AM

Author(s): Mario Harper, Camilo Ordonez, Emmanuel Collins, Gordon Erlebacher, Florida State Univ. (United States)

[Add To My Schedule](#) **Coffee Break and Dedicated Exhibition Time 10:10 AM - 11:00 AM****Session 4:  
Navigation**

Wednesday 18 April 2018

11:00 AM - 12:00 PM

Location: Ballroom Level, Naples 1


Session Chairs: [Hoa G. Nguyen](#), SPAWAR Systems Ctr. Pacific (United States) ; [Paul L. Muench](#), U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States)

**Brain emotional learning-based intelligent path planning and coordination control of networked unmanned autonomous systems (Conference Presentation)**

Paper 10640-18

Time: 11:00 AM - 11:20 AM

Author(s): Hao Xu, Univ. of Nevada, Reno (United States)


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**Image-aided inertial navigation for an Octocopter**

Paper 10640-20

Time: 11:20 AM - 11:40 AM

Author(s): Baheerathan Sivalingam, Ove Kent Hagen, Norwegian Defence Research Establishment (Norway)


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**UAV vision-based localization techniques using high-altitude images and barometric altimeter**

Paper 10640-21

Time: 11:40 AM - 12:00 PM

Author(s): Koichiro Yawata, Tomonori Yamamoto, Jun-ichiro Watanabe, Yuki Nishikawa, Hitachi, Ltd. (Japan)

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THURSDAY 19 APRIL

[Show All Abstracts](#)

## Session 5: Collaborative Robotic Teams: Joint Session with conferences 10640 and 10651

Thursday 19 April 2018

8:00 AM - 10:50 AM

Location: Ballroom Level, Sanibel 3


Session Chairs: Robert E. Karlsen, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States) ; [Raja Suresh](#), General Dynamics Mission Systems (United States)

**Advances in autonomous underwater vehicles and the move to network centric persistent subsea capabilities (Invited Paper)**

Paper 10651-20

Time: 8:00 AM - 8:30 AM

Author(s): Thomas Altshuler, Clayton Jones, Robert G. Melvin, Daniel Shropshire, Joseph Borden, Teledyne Marine (United States)


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**Swarm of autonomous unmanned aerial vehicles with 3D deconfliction (Invited Paper)**

Paper 10651-21

Time: 8:30 AM - 9:00 AM

Author(s): Zbigniew Bogdanowicz, U.S. Army Armament Research, Development and Engineering Ctr. (United States)


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**Removing the bottleneck: utilizing autonomy to manage multiple UAS sensors from inside a cockpit**

Paper 10640-22

Time: 9:00 AM - 9:20 AM

Author(s): Thomas Alicia, Grant S. Taylor, U.S. Army (United States); Terry Turpin, Turpin Technologies (United States); Amit Surana, United Technologies Research Ctr. (United States)


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**Real-time inspection of 3D features using sUAS with low-cost sensor suites**

Paper 10640-23

Time: 9:20 AM - 9:40 AM

Author(s): Benjamin Purman, Chris Kawatsu, Aaron Zhao, Andy Gillies, Mike Jeffers, Paul Sheridan, Soar Technology, Inc. (United States)


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**Benchmarking a LIDAR obstacle perception system for aircraft autonomy**

Paper 10640-24

Time: 9:40 AM - 10:00 AM

Author(s): Adam Stambler, Hugh Cover, Kyle Strabala, Near Earth Autonomy, Inc. (United States)


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**Cooperative cognitive electronic warfare UAV game modeling for frequency hopping radar**

Paper 10640-25

Time: 10:00 AM - 10:20 AM

Author(s): Mark D. Rahmes, Dave Chester, Rich Clouse, Jodie Hunt, Tom Ottoson, Harris Corp. (United States)


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**Decentralized control methods for self-organizing collaborative robotic teams (Invited Paper)**

Paper 10651-14

Time: 10:20 AM - 10:50 AM

Author(s): John Budenske, Lori Murray, General Dynamics Mission Systems (United States)

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