

## SSIAI 2018—PROGRAM SCHEDULE

# IEEE SOUTHWEST SYMPOSIUM ON IMAGE ANALYSIS AND INTERPRETATION

April 8-10, 2018 | [Harrah's Hotel & Casino](http://www.harrah.com) | [Las Vegas, Nevada USA](http://www.lasvegas.com)  
<http://www.ssi.ai.org>

## Sunday, April 8, 2018

5:30 Social Reception (Location TBD)

## Monday, April 9, 2018

8:00-8:25 Registration

8:25-8:30 Opening

8:30-9:30 Plenary

9:30-10:15 (3 talks)

10:15-10:30 Break

10:30-11:45 (5 talks)

11:45-1:05 Lunch

1:05-2:05 Plenary

2:05-2:50 (3 talks)

2:50-3:05 Break

3:05-5:35 (9 talks)

6:30 pm Banquet, Wheel House

## Tuesday, April 10, 2018

8:30-9:30 Plenary

9:30-10:15 (3 talks)

10:15-10:20 Break

10:20-12:05 (7 talks)

12:05-1:30 Lunch

1:30-2:30 (Patentability of Machine Learning and Image Analysis Technology)

2:30-3:15 (3 talks)

3:15-3:35 Break

3:35-4:50 (5 talks)

4:50 Conclusion

## Monday, April 9, 2018

|               |                                                                                                                                                                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:00 – 8:25   | <b>Registration</b>                                                                                                                                                                                                                                                                                                           |
| 8:25 – 8:30   | <b>Opening</b>                                                                                                                                                                                                                                                                                                                |
| 8:30 – 9:30   | <b>Ed Delp, "Precision Farming: There Really Is More Than Corn In Indiana"</b>                                                                                                                                                                                                                                                |
| <b>M1</b>     | <b>Image Enhancement and Restoration</b>                                                                                                                                                                                                                                                                                      |
| 9:30 – 9:45   | <b>1001: Underwater Image Restoration using Deep Networks to Estimate Background Light and Scene Depth</b>                                                                                                                                                                                                                    |
| M1.1          | Keming Cao, <i>University of California, San Diego</i><br>Yan-Tsung Peng, <i>University of California, San Diego</i><br>Pamels C. Cosman, <i>University of California, San Diego</i>                                                                                                                                          |
| 9:45 – 10:00  | <b>1059: Thermal Image Enhancement Algorithm using Local and Global Logarithmic Transform Histogram Matching with Spatial Equalization</b>                                                                                                                                                                                    |
| M1.2          | Viacheslav Voronin, <i>Don State Technical University</i><br>Evgenii Semenishchev, <i>Don State Technical University</i><br>Sos Agaian, <i>CUNY/The College of Staten Island Staten Island</i>                                                                                                                                |
| 10:00 – 10:15 | <b>2000: A Reflectance Based Method for Shadow Detection and Removal</b>                                                                                                                                                                                                                                                      |
| M1.3          | Sri Kalyan Yarlagadda, <i>Purdue University</i><br>Fengqing Zhu, <i>Purdue University</i>                                                                                                                                                                                                                                     |
| 10:15 – 10:30 | <b>Break</b>                                                                                                                                                                                                                                                                                                                  |
| <b>M2</b>     | <b>Image Compression and Compressive Sensing</b>                                                                                                                                                                                                                                                                              |
| 10:30 – 10:45 | <b>1010: Reversible Color-To-Gray mapping with Resistance to JPEG Encoding</b>                                                                                                                                                                                                                                                |
| M2.1          | Takahiko Horiuchi, <i>Chiba University</i><br>Xu Wen, <i>Chiba University</i><br>Keita Hirai, <i>Chiba University</i>                                                                                                                                                                                                         |
| 10:45 – 11:00 | <b>1027: Image Compression: Sparse Coding vs. Bottleneck Autoencoders</b>                                                                                                                                                                                                                                                     |
| M2.2          | Yijing Watkins, <i>Los Alamos National Lab</i><br>Oleksandr Iaroshenko, <i>Los Alamos National Lab</i><br>Mohammad Sayeh, <i>Southern Illinois University Carbondale</i><br>Garrett Kenyon, <i>Los Alamos National Lab</i>                                                                                                    |
| 11:00 – 11:15 | <b>1039: Complex Correntropy Induced Metric Applied to Compressed Sensing with Complex-Valued Data</b>                                                                                                                                                                                                                        |
| M2.3          | João Guimarães, <i>Federal Institute of Rio Grande do Norte</i><br>Aluisio Fontes, <i>Federal Institute of Rio Grande do Norte</i><br>Felipe da Silva, <i>University of Texas at El Paso</i><br>Allan Martins, <i>Federal University of Rio Grande do Norte</i><br>Ricardo von Borries, <i>University of Texas at El Paso</i> |
| <b>M3</b>     | <b>Biomedical Image Analysis</b>                                                                                                                                                                                                                                                                                              |
| 11:15 – 11:30 | <b>1011: cTADA: The Design of a Crowdsourcing Tool for Online Food Image Identification and Segmentation</b>                                                                                                                                                                                                                  |
| M3.1          | Shaobo Fang, <i>Purdue University</i><br>Chang Liu, <i>Purdue University</i><br>Khalid Tahboub, <i>Purdue University</i><br>Fengqing Zhu, <i>Purdue University</i><br>Carol Boushey, <i>University of Hawaii Cancer Center</i><br>Edward Delp, <i>Purdue University</i>                                                       |

**11:30 – 11:45 1012: Sleep Analysis Using Motion and Head Detection**

M3.2

Jeehyun Choe, *Purdue University*  
 Daniel Mas Montserrat, *Purdue University*  
 Amy J. Schwichtenberg, *Purdue University*  
 Edward J. Delp, *Purdue University*

11:45 – 1:05

Lunch Break

**M4****Biomedical Image Analysis II**

1:05 – 2:05

**Scott T. Acton, "Brain Pixels: image analysis for neuroscience"**

2:05 – 2:20

**1035: Graph Modularity and Randomness Measures**

M4.1

Victor Vergara, *The Mind Research Network*  
 Qingbao Yu, *The Mind Research Network*  
 Vince Calhoun, *The Mind Research Network*

2:20 – 2:35

**1036: f-Sim: A Quasi-Realistic fMRI Simulation Toolbox using Digital Brain Phantom and Modeled Noise**

M4.2

Harshit Parmar, *Texas Tech University*  
 Xiangyu Liu, *Texas Tech University*  
 Brian Nutter, *Texas Tech University*  
 Sunanda Mitra, *Texas Tech University*

2:35 – 2:50

**1038: High-Homogeneity Functional Parcellation of Human Brain for Investigating Robust Functional Connectivity**

M4.3

Xiangyu Liu, *Texas Tech University*  
 Brian Nutter, *Texas Tech University*  
 Sunanda Mitra, *Texas Tech University*

2:50 – 3:05

Break

**M5****Image Models I**

3:05 – 3:20

**2002: A Marked Point Process Model incorporating Active Contours Boundary Energy**

M5.1

Camilo Aguilar, *Purdue University*  
 Mary Comer, *Purdue University*

3:35 – 3:50

**1033: Conjointly Space and 2D Frequency Localized Filter banks**

M5.2

Peter Tay, *Western Carolina University*  
 Yanjun Yan, *Western Carolina University*

3:50 – 4:05

**1048: Shape Adaptive Accelerated Parameter Optimization**

M5.3

Anthony Yezzi, *Georgia Institute of Technology*  
 Navdeep Dahiya, *Georgia Institute of Technology*

4:05 – 4:20

**1054: Golden Number Sampling Applied to Compressive Sensing**

M5.4

Felipe Batista da Silva, *The University of Texas at El Paso*  
 Ricardo von Borries, *The University of Texas at El Paso*

4:20 – 4:35

**1057: A Comparison of Column Subset Selection Methods for Unsupervised Band Subset Selection in Hyperspectral Imagery**

M5.5

Maher Aldeghlawi, *University of Texas at El Paso*  
 Miguel Velez-Reyes, *University of Texas at El Paso*

**M6****Object Detection and Deep Learning**

4:35 – 4:50

**1047: Viola-Jones Algorithm for Automatic Detection of Hyperbolic Regions in GPR Profiles of Bridge Decks**

M6.1

Mohammed Abdul Rahman, *Concordia University*  
 Tarek Zayed, *Concordia University*

|             |                                                                                                                                                                                                                      |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:50 – 5:05 | <b>1050: Robust Head Detection in Collaborative Learning Environments Using AM-FM Representations</b>                                                                                                                |
| M6.2        | Wenjing Shi, <i>University of New Mexico</i><br>Marios Pattichis, <i>University of New Mexico</i><br>Sylvia Celedón-Pattichis, <i>University of New Mexico</i><br>Carlos LópezLeiva, <i>University of New Mexico</i> |
| 5:05 – 5:20 | <b>1062: Drive-Net: Convolutional Network for Driver Distraction Detection</b>                                                                                                                                       |
| M6.3        | Mohammed S. Majdi, <i>University of Arizona</i><br>Sundaresh Ram, <i>Cornell University</i><br>Jonathan T. Gill, <i>University of Arizona</i><br>Jeffrey J. Rodriguez, <i>University of Arizona</i>                  |
| 5:20 – 5:35 | <b>1063: The precision of triangulation in monocular visual odometry</b>                                                                                                                                             |
| M6.4        | Nolang Fanani, <i>Goethe University Frankfurt</i><br>Rudolf Mester, <i>Goethe University Frankfurt</i>                                                                                                               |
| 6:30 p.m.   | <b>BANQUET AND ENTERTAINMENT:</b> Dinner at the Wheel House overlooking the Linq Promenade and ride on the High Roller. The ride is optional and paid by the law firm of Weintraub Tobin.                            |

## Tuesday, April 10, 2018

|               |                                                                                                                                                                                                                                             |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:30 – 9:30   | <b>Al Bovik, "The 'Ins' and 'Outs' of Perceptual Streaming Video"</b>                                                                                                                                                                       |
| <b>T1</b>     | <b>Image and Video Quality Models</b>                                                                                                                                                                                                       |
| 9:30 – 9:45   | <b>2001: Strategies for Quality-Aware Video Content Analytics</b>                                                                                                                                                                           |
| T1.1          | Amy R. Reibman, <i>Purdue University.</i>                                                                                                                                                                                                   |
| 9:45 – 10:00  | <b>1013: On the Natural Statistics of Chromatic Images</b>                                                                                                                                                                                  |
| T1.2          | Zeina Sinno, <i>The University of Texas at Austin</i><br>Alan Bovik, <i>The University of Texas at Austin</i>                                                                                                                               |
| 10:00 – 10:15 | <b>1044: Natural Scene Statistics for Noise Estimation</b>                                                                                                                                                                                  |
| T1.3          | Praful Gupta, <i>The University of Texas at Austin</i><br>Christos Bampis, <i>The University of Texas at Austin</i><br>Yize Jin, <i>The University of Texas at Austin</i><br>Alan Bovik, <i>The University of Texas at Austin</i>           |
| 10:15 – 10:20 | <b>Break</b>                                                                                                                                                                                                                                |
| <b>T2</b>     | <b>Biomedical Image Analysis III</b>                                                                                                                                                                                                        |
| 10:20 – 10:35 | <b>1060: Classification of Primary Cilia in Microscopy Images Using Convolutional Neural Random Forests</b>                                                                                                                                 |
| T2.1          | Sundaresh Ram, <i>Cornell University</i><br>Mohammed S. Majdi, <i>University of Arizona</i><br>Jeffrey J. Rodriguez, <i>University of Arizona</i><br>Yang Gao, <i>University of Utah</i><br>Heddwen L. Brooks, <i>University of Arizona</i> |
| 10:35 – 10:50 | <b>1017: In-between and cross-frequency dependence-based summarization of resting-state fMRI data</b>                                                                                                                                       |
| T2.2          | Maziar Yaesoubi, <i>The Mind Research Network</i><br>Rogers Silva, <i>The Mind Research Network</i><br>Vince Calhoun, <i>The Mind Research Network</i>                                                                                      |

- 10:50 – 11:05 **1042: Fully Automatic Baseline Correction in Magnetic Resonance Spectroscopy**  
 Omid Bazgir, *Texas Tech University*  
 Sunanda Mitra, *Texas Tech University*  
 Brian Nutter, *Texas Tech University*  
 Eric Walden, *Texas Tech University*
- T2.4

### T3 Machine Learning and Deep Learning Methods

- 11:05 – 11:20 **1018: Artifact Detection Maps Learned using Shallow Convolutional Networks**  
 Todd Goodall, *University of Texas at Austin*  
 Alan Bovik, *University of Texas at Austin*
- T3.1
- 11:20 – 11:35 **1031: Estimating Plant Centers Using A Deep Binary Classifier**  
 Yuhao Chen, *Purdue University*  
 Javier Ribera, *Purdue University*  
 Edward Delp, *Purdue University*
- T3.2
- 11:35 – 11:50 **1043: Automatic Assessment of Hoarding Clutter Using Convolutional Neural Networks**  
 M. Ozan Tezcan, *Boston University*  
 Janusz Konrad, *Boston University*  
 Jordana Muroff, *Boston University*
- T3.3
- 11:50 – 12:05 **1058: Performance of Supervised Classifiers for Damage Scoring of Zebrafish Neuromasts**  
 Rohit Philip, *University of Arizona*  
 Sree Ramya Malladi, *University of Arizona*  
 Maki Niihori, *University of Arizona*  
 Abraham Jacob, *Center for Neurosciences*  
 Jeffrey J. Rodriguez, *University of Arizona*
- T3.4

### 12:05 – 1:30 Lunch Break

- 1:30 – 2:30 **Panel: "Myths, Rumors, and the Law: Patentability of Machine Learning and Image Analysis Technology"**

### T4 Real-Time Image Processing and Hardware Acceleration

- 2:30 – 2:45 **1015: Efficient Face And Gesture Recognition For Time Sensitive Application**  
 Anush Ananthakumar, *Georgia Institute Of Technology*
- T4.1
- 2:45 – 3:00 **1020: Efficient GPU-based implementation of the median filter based on a multi-pixel-per-thread framework**  
 Gabriel Salvador, *Pontificia Universidad Catolica del Peru*  
 Juan M. Chau, *Pontificia Universidad Catolica del Peru*  
 Jorge Quesada, *Pontificia Universidad Catolica del Peru*  
 Cesar Carranza, *Pontificia Universidad Catolica del Peru*
- T4.2
- 3:00 – 3:15 **1032: A New Hardware Architecture for the Ridge Regression Optical Flow Algorithm**  
 Taylor Simons, *Brighan Young University*  
 Dah Jye Lee, *Brighan Young University*
- T4.3

### 3:15 – 3:35 Break

### T5 Object Detection and Data Fusion

- 3:35 – 3:50 **1023: A Novel Semi-Supervised Detection Approach with Weak Annotation**  
 Eric K. Tokuda, *University of São Paulo*  
 Gabriel B. A. Ferreira, *University of São Paulo*
- T5.1
- 3:50 – 4:05 **1041: Fused Reasoning under Uncertainty for Soldier Centric Human-Agent Decision**  
 Adrienne Raglin, *Army Research Lab*  
 Andre Harrison, *Army Research Lab*  
 Douglass Summers-Stay, *Army Research Lab*
- T5.2

|             |                                                                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4:05 – 4:20 | <b>1051: A Ground-Truth Fusion Method for Image Segmentation Evaluation</b>                                                                                                                                                             |
| T5.3        | Sree Ramya S. P. Malladi, <i>University of Arizona</i><br>Sundaresh Ram, <i>Cornell University</i><br>Jeffrey J. Rodriguez, <i>University of Arizona</i>                                                                                |
| 4:20 – 4:35 | <b>1056: Context-Sensitive Human Activity Classification in Collaborative Learning Environments</b>                                                                                                                                     |
| T5.4        | Abigail Jacoby, <i>The University of New Mexico</i><br>Marios Pattichis, <i>The University of New Mexico</i><br>Sylvia Celedon-Pattichis, <i>The University of New Mexico</i><br>Carlos LopezLeiva, <i>The University of New Mexico</i> |
| 4:35 – 4:50 | <b>1019: DDT: Decentralized event Detection and Tracking using an ensemble of vertex-reinforced walks on a graph</b>                                                                                                                    |
| T5.5        | Tamal Batabyal, <i>University of Virginia</i><br>Scott T. Acton, <i>University of Virginia</i>                                                                                                                                          |
| 4:50 – 5:00 | <b>Conclusion</b>                                                                                                                                                                                                                       |