

<i>MTFH: A Matrix Tri-Factorization Hashing Framework for Efficient Cross-Modal Retrieval</i> X. Liu, Z. Hu, H. Ling, and Y.-M. Cheung.....	964
<i>Nonlinear Regression via Deep Negative Correlation Learning</i> L. Zhang, Z. Shi, M.-M. Cheng, Y. Liu, J.-W. Bian, J.T. Zhou, G. Zheng, and Z. Zeng.....	982
<i>On the Global Geometry of Sphere-Constrained Sparse Blind Deconvolution</i> Y. Zhang, Y. Lau, H.-W. Kuo, S. Cheung, A. Pasupathy, and J. Wright .....	999
<i>Sequence-to-Segments Networks for Detecting Segments in Videos</i> Z. Wei, B. Wang, M. Hoai, J. Zhang, X. Shen, Z. Lin, R. Mèch, and D. Samaras.....	1009
<i>SEWA DB: A Rich Database for Audio-Visual Emotion and Sentiment Research in the Wild</i> J. Kossaifi, R. Walecki, Y. Panagakis, J. Shen, M. Schmitt, F. Ringeval, J. Han, V. Pandit, A. Toisoul, B. Schuller, K. Star, E. Hajiyev, and M. Pantic.....	1022
<i>Surface-Aware Blind Image Deblurring</i> J. Liu, M. Yan, and T. Zeng .....	1041
<i>Topology-Aware Non-Rigid Point Cloud Registration</i> K. Zampogiannis, C. Fermüller, and Y. Aloimonos .....	1056
<i>Video Anomaly Detection with Sparse Coding Inspired Deep Neural Networks</i> W. Luo, W. Liu, D. Lian, J. Tang, L. Duan, X. Peng, and S. Gao .....	1070

## SHORT PAPERS

<i>3D Fingerprint Recognition based on Ridge-Valley-Guided 3D Reconstruction and 3D Topology Polymer Feature Extraction</i> X. Yin, Y. Zhu, and J. Hu .....	1085
<i>A Differential Approach for Gaze Estimation</i> G. Liu, Y. Yu, K.A. Funes Mora, and J.-M. Odobez.....	1092
<i>Adversarial Attack Type I: Cheat Classifiers by Significant Changes</i> S. Tang, X. Huang, M. Chen, C. Sun, and J. Yang.....	1100
<i>Hierarchical Long Short-Term Concurrent Memory for Human Interaction Recognition</i> X. Shu, J. Tang, G.-J. Qi, W. Liu, and J. Yang .....	1110



**PURPOSE:** The IEEE Computer Society is the world's largest association of computing professionals and is the leading provider of technical information in the field.

**MEMBERSHIP:** Members receive the monthly magazine *Computer*, discounts, and opportunities to serve (all activities are led by volunteer members). Membership is open to all IEEE members, affiliate society members, and others interested in the computer field. **OMBUDSMAN:** Email [ombudsman@computer.org](mailto:ombudsman@computer.org)  
**COMPUTER SOCIETY WEBSITE:** [www.computer.org](http://www.computer.org)

### EXECUTIVE COMMITTEE

**President:** Forrest Shull; **President-Elect:** William D. Gropp; **Past President:** Leila De Floriani; **First VP:** Riccardo Mariani; **Second VP:** Fabrizio Lombardi; **Secretary:** Ramalatha Marimuthu; **Treasurer:** David Lomet; **VP, Membership & Geographic Activities:** Andre Oboler; **VP, Professional & Educational Activities:** Hironori Washizaki; **VP, Publications:** M. Brian Blake; **VP, Standards Activities:** Riccardo Mariani; **VP, Technical & Conference Activities:** Grace Lewis; **2021-2022 IEEE Division VIII Director:** Christina M. Schober; **2020-2021 IEEE Division V Director:** Thomas M. Conte; **2021 IEEE Division V Director-Elect:** Cecilia Metra

### BOARD OF GOVERNORS

**Term Expiring 2021:** M. Brian Blake, Fred Douglass, Carlos E. Jimenez-Gomez, Ramalatha Marimuthu, Erik Jan Marinissen, Kunio Uchiyama  
**Term Expiring 2022:** Nils Aschenbruck, Ernesto Cuadros-Vargas, David S. Ebert, Grace Lewis, Hironori Washizaki, Stefano Zanero  
**Term Expiring 2023:** Jyotika Athavale, Terry Benzal, Takako Hashimoto, Irene Pazos Viana, Annette Reilly, Deborah Silver

### BOARD OF GOVERNORS MEETING

1 - 5 February 2021, virtual

### EXECUTIVE STAFF

**Executive Director:** Melissa A. Russell; **Director, Governance & Associate Executive Director:** Anne Marie Kelly; **Director, Conference Operations:** Silvia Ceballos; **Director, Finance & Accounting:** Sunny Hwang; **Director, Information Technology & Services:** Sumit Kacker; **Director, Marketing & Sales:** Michelle Tubb; **Director, Membership & Education:** Eric Berkowitz

### COMPUTER SOCIETY OFFICES

**Washington, D.C.:** 2001 L St., Ste. 700, Washington, D.C. 20036-4928; **Phone:** +1 202 371 0101; **Fax:** +1 202 728 9614; **Email:** [help@computer.org](mailto:help@computer.org)  
**Los Alamitos:** 10662 Los Vaqueros Cir., Los Alamitos, CA 90720; **Phone:** +1 714 821 8380; **Email:** [help@computer.org](mailto:help@computer.org)  
**MEMBERSHIP & PUBLICATION ORDERS:** **Phone:** +1 800 678 4333; **Fax:** +1 714 821 4641; **Email:** [help@computer.org](mailto:help@computer.org)

### IEEE BOARD OF DIRECTORS

**President:** Susan K. "Kathy" Land; **President-Elect:** K.J. Ray Liu; **Past President:** Toshio Fukuda; **Secretary:** Kathleen A. Kramer; **Treasurer:** Mary Ellen Randall; **Director & President, IEEE-USA:** Katherine J. Duncan; **Director & President, Standards Association:** James Matthews; **Director & VP, Educational Activities:** Stephen Phillips; **Director & VP, Membership and Geographic Activities:** Maike Luiken; **Director & VP, Publication Services & Products:** Lawrence Hall; **Director & VP, Technical Activities:** Roger U. Fujii