Deepu Rajan

Contact Information

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Research Interests

Computer Vision, Image and Video processing, Multimedia signal processing

- Machine learning in vision
- Human action understanding
- Multimedia signal processing

Education

Indian Institute of Technology, Bombay, India

Ph.D., 2001

- Dissertation Title: "Some New Approaches to Generation of Super-resolution Images"
- Advisor: Prof. Subhasis Chaudhuri

Clemson University, Clemson, South Carolina, USA

M.S., Electrical Engineering, 1990

Birla Institute of Technology, Ranchi, India

B.E., Electronics and Communication Engineering, 1988

Academic Experience

Nanyang Technological University, Singapore
College of Computing & Data Science
Associate Professor, **April, 2010 - present**
Assistant Professor, **June, 2002 - March, 2010**

- Nominated for Nanyang Award for Teaching Excellence, 2008.
- Voted one of ten most popular lecturers by students, 2009.

Cochin University of Science and Technology, Cochin, India
Department of Electronics
Lecturer, **April, 1992 - May, 2002**

- Subjects taught - Digital Image Processing, Advanced Digital Signal Processing, Neural Networks, Artificial Intelligence, Robotics, Discrete Mathematics

TKM College of Engineering, Kollam, India
Dept. of Electronics & Communication Engg.
Lecturer, **November, 1991 - March, 1992**

- Subjects taught - Electronics I

Grants

Rolls-Royce@NTU Corporate Lab (NRF, Rolls-Royce, NTU)
Principal Investigator **Jan, 2019 - Jan, 2024**
AI for smart image understanding, S$522,900.

Minsitry of Education (MoE) Tier 2
Principal Investigator **Jul 2019 - Jul 2022**
Integrated multisensory systems for autnomous maritime vessels, S$529,190.

A*Star BMRC
Principal Investigator **June 2017 - May 2019**
Differential saliency algorithms for facial skin visual appearance assessment, S$524,400.

Ministry of Education (MoE) Tier 1
Co-Principal Investigator **November, 2017 - April, 2019**
Eye gaze estimation using deep appearance in natural environment, S$80,000.

Rolls-Royce@NTU Corporate Lab (NRF, Rolls-Royce, NTU)
Principal Investigator **May, 2015 - July, 2017**
Electro-optical Camera Based Object Detection, Identification and Tracking at Sea, S$319,175.

Ministry of Education (MoE) Tier 1
Principal Investigator **November, 2013 - October, 2015**
Video Analytics for Evaluation of Cataract Surgery by Trainee Surgeons (VET-CAT), S$98,000.

National Research Foundation (Interactive and Digital Media)
Principal Investigator **December, 2008 - December, 2011**
Attentional Mechanisms for Video Retargeting, S$1,236,000.

Institute of Media Innovation (IMI)
Co-Principal Investigator **April, 2009 - July, 2010**
The Application of Computational Aesthetics in the Acquisition and Treatment of Digital Images, S$120,000.

Research Support Office, NTU **January, 2007 - December, 2011**
Research Outcome Award & Recognition (ROAR), approx. S$100,000 to support 1 Ph.D student.

Infocomm Cluster, NTU
Principal Investigator **September, 2007 - March, 2008**

Knowledge Discovery with Multimodality Media Analysis, S$50,000.

University Research Committee (URC - SEP)
Co-Investigator **2006 - 2007**
Click & Tell with a Mobile Phone (an extension to the PET-DEVICE++ project), S$50,500.

Agency for Science, Technology & Research (A*Star)
Collaborator **2004 - 2007**
Universal Multimedia Access over 4G Wireless Network, S$611,000.

Agency for Science, Technology & Research (A*Star)
Principal Investigator **October, 2004 - March, 2005**
Media Adaptation for Small Form Factor Devices to Projection Surfaces, S$28,500.

Agency for Science, Technology & Research (A*Star)
Co-Principal Investigator **October, 2004 - March, 2005**
Summarization of Proceedings in a Smart Meeting Room, S$21,000.

University Research Committee (URC)
Co-Investigator **2002 - 2005**
PET-DEVICE++ (Push Pull Extraction tool for distributed audiovisual content terminal), S$269,545.

Research Supervision

Graduated Students

- Chinthani Sugandhika (Ph.D, 2026): Fine-grained video understanding and reasoning for everyday human activities
- E V S Ravishankar (Ph.D, 2026): Deep learning representations and formulations for texure recognition
- Zou Heqing (Ph.D, 2025): Learning across modalities: representation, alignment and translation in multimodal systems
- Mao Shangbo (Ph.D, 2025): Deep learning for texture recognition: from streamlined architecture to multimodal extensions
- Qiu Yihui (Ph.D, 2025): Goal-oriented temporal action segmentation and action anticipation
- Shen Meng (Ph.D, 2025): Data efficient deep multimodal learning
- Chang Jun Qing (Ph.D, 2025): Learning compositionality for image classification and segmentation
- EVS Ravishankar (MSc in AI, 2022): Water segmentation in videos
- Xie Chen (Ph.D, 2021): An embedded neuro-fuzzy architecture for explainable time series analysis
- Jubin Johnson (Ph.D, 2017): Sampling based image and video matting without

compositing equation

- Hisham Cholakkal (Ph.D, 2017): Classifier based approaches for top-down salient object detection (MBZ University of AI, UAE)
- Karthik Muthuswamy (Ph.D, 2014): Algorithms for saliency detection in videos (SAP, Germany)
- Zhixiang Ren (Ph.D, 2013, co-supervisor): Exploring effective data representation for saliency detection in image and video
- Behrouz Saghafi Khadem (Ph.D, 2013): Human action recognition by embedding silhouettes and visual words (Capital One, USA)
- Ehsan Younessian (Ph.D, 2013): A framework for associated news story retrieval (Comcast Cable, USA)
- Ehsan Shahrian Varnousfaderani (Ph.D, 2013): Sampling based approaches for image and video matting (Qualcomm, USA)
- Viswanath Gopalakrishnan (Ph.D, 2011): Models for visual saliency in images and videos (IIIT, Bangalore)
- Alex Y. S. Chia (Ph.D, 2010, co-supervisor): Category level object detection and image classification (Youtube, Singapore)
- Hu Yiqun (Ph.D, 2008): Detection of visual attention regions in images and videos (NTUC Enterprise Co-operative, Singapore)
- Yi Haoran (Ph.D, 2007): Motion-based video content indexing (Citadel Securities, USA)
- Mareeta Mathai (M.Engg., 2015) Some methods for video forgery detection
- Guo Jing (M. Engg., 2007): Human motion detection and tracking in videos
- Chua Kiat Lee (M.Sc, 2005): A cDNA micro-array image analysis method
- Lakshmi Balachandran (URECA[1], 2007): Multimodal processing of video sequences
- Anar Vinay Pitre (URECA[1], 2003): Genomic signal processing

Research Staff

- Dr. Zhou Weigui Jair (2019)
- Mao Shangbo (2018)
- Prabodh Tripathi (2019)
- Dr. Wang Liangliang (2018)
- Gauri Tulsulkar (2018)
- Dr. Dilip Kumar Prasad (2015)
- Dr. Zhang Xuejie (2010)
- Hoang Minh Chau
- Ye Ruoping
- Dr. Hu Yiqun (2010)

[1] Undergraduate Research Experience on CAmpus.

- O. V. Ramana Murthy (2009)
- Budi Asmana Usman (2010)
- Dr. Zhanli Sun (Research Fellow, 2007)
- Dr. P. Shivakumara (Research Fellow, 2007)

Publications

Edited Proceedings

- T. J. Cham, J. Cai, C. Dorai, **D. Rajan**, T. S. Chua and L. T. Chia, "Advances in Multimedia Modeling", *Lecture Notes on Computer Science*, Vol. 4351 and Vol. 4352, 2007.

Book Chapters

- Y. Hu, V. Gopalakrishnan and **D. Rajan**, "Modeling visual saliency in images and videos", Computer Vision for Multimedia Applications: Methods and Solutions, IGI-Global, 2011, pp. 273-293.

- **D. Rajan** and S. Chaudhuri, "Generalized interpolation for super-resolution," Super-Resolution Imaging, *Kluwer Academic Press*, 2001, pp. 45-72.

- **D. Rajan** and S. Chaudhuri, "Super-resolution imaging using blur as a cue," Super-Resolution Imaging, *Kluwer Academic Press*, 2001, pp. 107-130

Journals

- H. Lu, Y. Yu, S. Lu, **D. Rajan**, B. P. Ng, A. Kot and X. Jiang, "MambaTAD: When state-space models meet long-range temporal action detection", IEEE Trans. Multimedia (*accepted*).

- Y. Xu, J. Wang, R. Zhang, D. Niyato, **D. Rajan**, L. Yu, H. Zhou, A. Jamalipour, and X. Wang, "Enhancing wireless networks for IoT with large vision models: foundations and applications", IEEE Communications Magazine (*accepted*).

- J. Wang, H. Du, D. Niyato, J. Kang, Z. Xiong, **D. Rajan**, S. Mao and X. Shen, "A unified framework for guiding generative AI with wireless perception in resource constrained mobile edge networks", *IEEE Trans. Mobile Computing*, vol. 23, no. 11, pp. 10344-10360, Nov. 2024.

- J. Burton-Barr, B. Fernando and **D. Rajan**, "Activation control of vision models for sustainable AI systems", *IEEE Trans. Artificial Intelligence*, vol. 5, no. 7, pp. 3470-3481, July 2024.

- Y. Qiu and **D. Rajan**, "A Multivariate Markov Chain Model for Interpretable Dense Action Anticipation", *Neurocomputing*, vol. 574, Article No. 127285, 2024. https://doi.org/10.1016/j.neucom.2024.127285

- A. Koksal, K. E. Ak, Y. Sun, **D. Rajan** and J. H. Lim, "Controllable video generation with text-based instructions", *IEEE Trans. Multimedia*, vol. 26, pp. 190

– 201, 2024.

- X. Chen, **D. Rajan** and C. Quek, "An embedded deep fuzzy association model for learning and explanation", *Applied Soft Computing*, vol. 131, Article No. 109738, Dec. 2022.

- H. Christianto, G. Lee, Z. W. Jair, H. Kasim and **D. Rajan**, "Smart interpretable model (SIM) enabling subject matter experts in rule generation", *Expert Systems with Applications*, vol. 207, Article No. 117945, Nov 2022.

- X. Chen, **D. Rajan** and C. Quek, "An Interpretable Neural Fuzzy Hammerstein-Wiener Network for Stock Price Prediction", *Information Sciences*, vol. 577, pp. 324-335, 2022.

- S. Mao, **D. Rajan** and L. T. Chia, "Deep Residual Pooling Network for Texture Recognition", *Pattern Recognition*, vol. 112, Article No. 107817, Apr. 2021.

- L. Wang and **D. Rajan**, "An image similarity descriptor for classification tasks", *J. Visual Communication and Image Representation*, vol. 77, Article No. 102847, Aug. 2020..

- D. K. Prasad, H. Dong, **D. Rajan**, C. Quek, "Are object detection assessment criteria ready for maritime computer vision?", *IEEE Transactions on Intelligent Transportation Systems* (accepted).

- L. Yi, B. S. Lee, **D. Rajan**, A. Sluzek and M. Mckeown, "CamType: Assistive Text Entry Using Gaze with an Off-the-shelf Webcam", *J. Machine Vision and Applications*, no. 30, pp.407-421, 2019.

- A. Manyala, H. Cholakkal, V. Anand, V. Kanhangad and **D. Rajan**, "CNN-based gender classification in near-infrared periocular images", *Pattern Analysis and Applications*, vol. 22, no. 4, pp.1493 – 1504, 2019.

- D. K. Prasad, C. K. Prasath, **D. Rajan**, L. Rachmawati, E. Rajabally and C. Quek, "Object detection in maritime environment: Performance evaluation of background subtraction methods", *IEEE Trans. Intelligent Transportation Systems*, vol. 20, no. 5, pp. 1787 – 1802, 2019.

- H. Cholakkal, J. Johnson and **D. Rajan**, "Backtracking Spatial Pyramid Pooling (SPP) - based Image Classifier for Weakly Supervised Top-Down Salient Object Detection", *IEEE Trans. Image Processing*, vol. 27, no.12, pp.6064-6078, 2018.

- J. Li, **D. Rajan** and J. Yang, "Locality and context-aware top-down saliency", *IET Image Processing*, vol.12, no.3, pp.400-407, 2018.

- J. Johnson, H. Cholakkal and **D. Rajan**, "$L1$-regularized reconstruction error as

alpha matte", *IEEE Signal Processing Letters*, vol.24, no.4, pp.407-411, 2017.

- D. K. Prasad, **D. Rajan**, L. Rachmawati, E. Rajabally and C. Quek, "Video processing from electro-optical sensors for object detection and tracking in maritime environment: A survey", *IEEE Trans. Intelligent Transportation Systems*, vol. 18, no. 8, pp.1993-2016.

- D. K. Prasad, **D. Rajan**, L. Rachmawati, E. Rajabally and C. Quek, "MuSCoWERT: multi-scale consistence of weighted edge Radon tranform for horizon detection in maritime images", *J. Optical Society of America, Series A*, vol.33, no.12, pp.2491-2500, 2016.

- J. Li, L. Luo, F. Zhang, J. Yang and **D. Rajan**, "Double low rank matrix recovery for saliency fusion", *IEEE Trans. Image Processing*, vol.25, no.9, pp.4421-4432, 2016.

- J. Johnson, E. Shahrian, H. Cholakkal and **D. Rajan**, "Sparse coding for alpha matting", *IEEE Trans. Image Processing*, vol.25, no.9, pp.3032-3043, 2016.

- H. Cholakkal, J. Johnson and **D. Rajan**, "A classifier-guided approach for top-down salient object detection", *Signal Processing:Image Communication*, vol. 45, pp.24-40, 2016.

- B. Saghafi, **D. Rajan** and W. Li "Efficient 2D viewpoint combinations for human action recognition", *Pattern Analysis and Applications*, vol. 19, no.2, pp.563-577, 2016.

- K. Muthuswamy and **D. Rajan**, "A particle filter framework for salient object detection in videos", *IET Computer Vision*, vol.9, no.3, pp.428-438, 2015.

- E. Shahrian, B. Price, S. Cohen and **D. Rajan**, "Temporally coherent and spatially accurate video matting," *Computer Graphics Forum*, vol. 33, no. 2, pp.381-390, May 2014.

- K. Muthuswamy and **D. Rajan**, "Salient motion detection in compressed domain", *IEEE Signal Processing Letters*, vol. 20, no. 10, pp. 996-999, 2013.

- E. Shahrian and **D. Rajan**, "Weighted color and texture sample selection for image matting", *IEEE Trans. Image Processing*, vol. 22, no. 11, pp. 4260-4270, 2013.

- Z. Ren, S. Gao, L. T. Chia and **D. Rajan**, "Regularized feature reconstruction for spatio-temporal saliency detection", *IEEE Trans. Image Processing*, vol. 22, no. 8, pp. 3120-3132, 2013.

- E. Shahrian and **D. Rajan**, "Using texture to complement color in image matting", *Image and Vision Computing*, vol. 31, no. 9, pp. 658-672, 2013.

- E. Younessian and **D. Rajan**, "Multi-modal fusion for associated news story retrieval", *Multimedia Tools and Applications*, March 2013.

- X. Zhang, Y. Hu, and **D. Rajan**, "Dynamic distortion maps for image retargeting", *J. Vis. Comm. Image Representation*, vol. 24, no.1, pp. 81-92, Jan. 2013.

- Alex Y. S. Chia, **D. Rajan**, M. K. H. Leung and S. Rahardja, "Object recognition by discriminative combinations of line segments, ellipses and appearance features", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 34, no.9, pp. 1758-1772, Sept. 2012.

- V. Gopalakrishnan, **D. Rajan** and Y. Hu, "A Linear Dynamical System Framework for Salient Motion Detection", *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 22, no. 5, pp. 683-692, May 2012.

- P. Shivakumara, **D. Rajan** and S. A. Sadananthan, "New edge characteristics for scene and object classification", *Int. Journ. of Pattern Recognition and Artificial Intelligence*, accepted (doi: 10.1142/S0218001412550014).

- B. Saghafi and **D. Rajan**, "Human action recognition using pose-based discriminant embedding", *Signal Processing:Image Communication*, vol. 27, no. 1, pp. 96-111, Jan. 2012.

- Alex Y. S. Chia, S. Rahardja, **D. Rajan** and M. K. H. Leung, "A split and merge based ellipse detector with self-correcting capability", *IEEE Transactions on Image Processing*, vol. 20, no.7, pp. 1991-2006, July 2011.

- E. Youneesian and **D. Rajan**, "Content based keyframe clustering using near duplicate keyframe identification", *Int. Journal of Multimedia Data Engineering and Management*, vol.2, no.1, pp.1-21, Jan-Mar. 2011.

- V. Gopalakrishnan, Y. Hu and **D. Rajan**, "Random walks on graphs for salient object detection in images", *IEEE Transactions on Image Processing*, vol. 19, no. 12, pp. 3232-3242, Dec. 2010.

- Z. L. Sun, **D. Rajan** and L. T. Chia, "Scene classification using multiple features in a two-stage probabilistic classification framework", *Neurocomputing*, vol. 73, pp. 2971-2979, Oct. 2010.

- Alex Y. S. Chia, S. Rahardja, **D. Rajan** and Maylor K. H. Leung, "Structural descriptors for category level object detection", *IEEE Transactions on Multimedia*, vol. 11, no. 8, pp.1407-1421, Dec. 2009.

- Y. Hu, X. Cheng, L. T. Chia, X. Xie, **D. Rajan** and A.-H. Tan, "Coherent phrase model for efficient image near-duplicate retrieval", *IEEE Transactions on Multimedia*, vol. 11, no. 8, pp.1434-1445, Dec. 2009.

- V. Gopalakrishnan, Y. Hu and **D. Rajan**, "Salient region detection by modeling distributions of color and orientation", *IEEE Transactions on Multimedia*, vol. 11, no. 5, pp. 892-905, 2009.
- Y. Hu, **D. Rajan** and L. T. Chia, "Attention-from-motion: A factorization approach to detecting attention objects in motion", *Computer Vision and Image Understanding*, vol. 113, no. 3, pp.319-331, March 2009.
- Y. Hu, **D. Rajan** and L. T. Chia, "Detection of visual attention regions in images using robust subspace analysis", *Journal of Visual Communications and Image Representation*, vol. 19, no. 3, pp.199-216, April 2008.
- Vinod A. P., **D. Rajan** and A. Singla, "Differential pixel-based low power and high speed implementation of DCT for on-board satellite image processing", *IET Circuits, Devices and Systems*, vol. 1, no. 6, pp.444-450, December 2007.
- J. Guo, **D. Rajan** and E. S. Chng, "Motion detection and human tracking for smart room applications", *WSEAS Transactions on Signal Processing*, vol. 2, no. 6, pp. 903-908, 2006.
- D. Tao, J. Cai, H. Yi, **D. Rajan**, L. T. Chia and K. N. Ngan, "Dynamic programming based reverse frame selection for VBR video delivery under constrained resources", *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 16, no. 11, pp. 1362-1375, Nov. 2006.
- H. Yi, **D. Rajan** and L. T. Chia, "A motion-based scene tree for browsing and retrieval of compressed videos", *Information Systems*, vol. 31, no. 7, pp. 638-658, Nov. 2006.
- H. Yi, **D. Rajan**, and L. T. Chia, "A motion-based scene tree for compressed video content management", *Image and Vision Computing*, vol. 24, no. 2, pp. 131-142, Feb. 2006.
- S. Liu, M. Xu, H. Yi, L. T. Chia, and **D. Rajan**, "Multimodal semantic analysis and annotation for basketball video", *EURASIP Journal of Applied Signal Processing*, pp. 1-13, 2006.
- H. Yi, **D. Rajan**, and L. T. Chia, "A new motion histogram to index motion content in video segments", *Pattern Recognition Letters*, vol. 26, no. 9, pp. 1221-1231, 2005.
- H. Yi, **D. Rajan**, and L. T. Chia, "Automatic generation of MPEG-7 compliant XML document for motion trajectory descriptor in sports video", *Multimedia Tools and Applications*, vol. 26, pp. 191-206, 2005.
- **D. Rajan** and S. Chaudhuri, "Simultaneous estimation of super-resolved scene and depth map from low resolution defocused observations", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 27, no. 9, pp.1102-1118, 2003.
- **D. Rajan**, S. Chaudhuri, and M. V. Joshi, "Multi-objective super resolution: concepts and examples", *IEEE Signal Processing Magazine*, vol. 20, no. 3, pp.

49-61, 2003.

- **D. Rajan** and S. Chaudhuri, "An MRF based approach to generation of super-resolution images from blurred observations", *Journal of Mathematical Imaging and Vision*, vol. 16, pp. 5 – 15, 2002.

- **D. Rajan** and S. Chaudhuri, "Data fusion techniques for super-resolution imaging", *Information Fusion*, vol. 3, pp. 25 – 38, 2002.

- **D. Rajan** and S. Chaudhuri, "Generalized interpolation and its application in super-resolution imaging", *Image and Vision Computing*, vol. 19, pp. 957-969, 2001.

Conferences

- Lu Hui, Y. Yu, S. Xia, Y. Yang, **D. Rajan**, B. P. Ng, A. Kot and X Jiang, "From Pretrain to Pain: Adversarial vulnerability of video foundation models without task knowledge, AAAI, Singapore, 2026.

- A. Anshul, E. S. Chng and **D. Rajan**, "A-V Representational learning via audio shift prediction for multimodal deepfake detection and temporal localization," WACV, Arizona, 2026.

- C. Li, C. Sugandhika, E. Y. Keat, E. Peh, H. Zhang, H. Yang, **D. Rajan** and F. Basura, "IMoRe: Implicit program-guided reasoning for human motion Q&A", ICCV, Hawaii, 2025.

- A. Anshul, S. Gopal, **D. Rajan** and E. S. Chng, "Intra-modal and cross-modal synchronization for audio-visual deepfake detection and temporal localization", ICCV, Hawaii, 2025.

- H. Zou, F. Lv, D. Zheng, E. S. Chng, **D. Rajan**, "Large language models meet contrastive learning : zero shot emotion recognition across languages, *ICME*, France, 2025.

- R. Evani, **D. Rajan** and S. Mao, "Chebyshev Attention Depth Permutation Texture Network with Latent Texture Attribute Loss", *CVPR*, Nashville, 2025.

- Y. Qiu and **D. Rajan**, "Action Sequence Augmentation for Action Anticipation", *ICLR*, Singapore, 2025.

- C. Sugandhika, C. Li, **D. Rajan** and B. Fernando, "Situational Scene Graph for Structured Human-centric Situation Understanding", *WACV*, Tucson, 2025.

- S. Mao and **D. Rajan**, "An Encoder-Agnostic Unsupervised Method For Describing Textures", *WACV*, Tucson, 2025.

- Y. Qiu and **D. Rajan**, "Improving temporal action segmentation and detection

with hierarchical grammar", *ICPR*, Kolkata, 2024.

- R. Evani, S. Mao, and **D. Rajan**, "Multiscale graph texture network", *ECCV*, Milan, 2024.

- H. Zou, M. Shen, Y. Hu, C. Chen, E. S. Chng and **D. Rajan**, "Cross-modality and within-modality regularization for audio-visual deepfake detection", *ICASSP*, Seoul, 2024.

- M. Shen, Y. Huang, J. Yin, H. Zou, **D. Rajan** and S. See, "Towards balanced active learning for multimodal classification", *ACM Multimedia*, Ottawa, 2023.

- H. Zou, M. Shen, C. Chen, Y. Hu, **D. Rajan** and E. S. Chng, "UniS-MMC: Multimodal Classification via Unimodality-supervised Multimodal Contrastive Learning", *Findings ACL*, Toronto, 2023.

- H. Zou, Y. Si, C. Chen, **D. Rajan** and E. S. Chng, "Speech emotion recognition with co-attention based multi-level acoustic information", *ICASSP*, Singapore, 2022.

- L. Wang and **D. Rajan**, "Comparative convolutional network for younger face identification", *IEEE Visual Communications and Image Processing (VCIP)*, Sydney, 2019.

- K. Muthuswamy and **D. Rajan**, "Salient object detection in tracking shots", *Proc. Int. Conf. Pattern Recog.* (ICPR), Cancun, Mexico, 2016.

- Y. Liu, B. S. Lee, A. Sluzek, **D. Rajan** and M. McKeown, "Feasibility analysis of eye typing with a standard webcam", *Proc. Workshop on Assistive Computer Vision and Robotics* (ACVR), Amsterdam, Netherlands, 2016.

- H. Cholakkal, J. Johnson and **D. Rajan**, "Backtracking ScSPM image classifier for weakly supervised top-down saliency", *Proc. Computer Vision and Pattern Recog.* (CVPR), Las Vegas, USA, 2016.

- M. Mathai, **D. Rajan** and S. Emmanuel, "Video forgery detection and localization using normalized correlation of moment features", *Southwest Symp. Image Anal. Interpretation* (SSIAI), Santa Fe, USA, 2016.

- J. Johnson, **D. Rajan** and H. Cholakkal, "Temporal trimap propagation using motion-assisted shape blending", *Proc. Vis. Comm. Image Proc.* (VCIP), Singapore, 2015.

- H. Cholakkal, **D. Rajan** and J. Johnson, "Top-down saliency with locality constrained contextual sparse coding", *Proc. British Machine Vision Conference* (BMVC), Swansea, UK, 2015.

- J. Li, **D. Rajan** and J. Yang, "Local Feature Embedding for Weakly Supervised Image Classification", *Int. Conf. Image Processing (ICIP)*, Quebec City, Canada, 2015.

- A. Laude, P. K. Aniyath, K. T. Seow, J. W. Kwok, H. B. Fam, W. J. Heng and **D. Rajan**, "Computer-aided evaluation of cataract surgery: a metric comparison of continuous circular capsulorhexis by trainee and specialist surgeons", *Assoc. for Research in Vision and Ophthalmology (ARVO) Meeting*, Denver, USA, May 2015.

- J. Johnson, **D. Rajan** and H. Chollakal, "Sparse codes as alpha matte", *Proc. British Machine Vision Conference* (BMVC), Nottingham, UK, 2014.

- E. Shahrian, B. Price and S. Cohen, **D. Rajan**, , "Temporally coherent and spatially accurate video matting", *Eurographics*, France, 2014.

- R. K. Gupta, Alex Y. S. Chia and **D. Rajan**, "Human activities recognition using depth images", *Proc. ACM Multimedia* (MM), Barcelona, Spain, 2013.

- K. Desingh, K. Madhava Krishna, **D. Rajan** and C. V. Jawahar, "Depth really matters: improving visual salient region detection with depth", *Proc. British Machine Vision Conference* (BMVC), Bristol, UK, 2013.

- E. Shahrian, **D. Rajan**, B. Price and S. Cohen, "Improved image matting using comprehensive sampling sets", *Proc. Computer vision and Pattern Recognition* (CVPR), Portland, USA, 2013.

- R. K. Gupta, Alex Y. S. Chia, **D. Rajan**, E. S. Ng and Z. Huang, "Image colorization using similar images", *ACM Multimedia* (MM), Nara, Japan, 2012.

- X. Zhang, Z. Ren, **D. Rajan** and Y. Hu, "Salient object detection through over-segmentation", *Int. Conf. Multimedia and Expo* (ICME), Melbourne, Australia, 2012.

- Z. Ren, S. Gao, **D. Rajan**, L. T. Chia and Y. Huang "Spatiotemporal saliency detection via sparse representation", *Int. Conf. Multimedia and Expo* (ICME), Melbourne, Australia, 2012.

- E. Shahrian and **D. Rajan**, "Weighted texture and color sample selection for image matting", *Computer Vision and Pattern Recognition* (CVPR), Providence, USA, 2012.

- Z. Ren, L. T. Chia and **D. Rajan**, "Boosting saliency detection with robust temporal alignment and local-global spatial contrast", *ACM Int. Conf. Multimedia Retrieval* (ICMR), Hong Kong, 2012.

- R. K. Gupta, Alex Y. S. Chia, **D. Rajan** and Z. Huang, "A learning-based ap-

proach for automatic image and video colorization", *Computer Graphics International* (CGI), Bournemouth, U.K., 2012.

- M. C. Hoang and **D. Rajan**, "Sparse likelihood saliency detection", *Int. Conf. Accoustics, Speech and Signal Processing* (ICASSP), Kyoto, Japan, 2012.

- K. Muthuswamy and **D. Rajan**, "Salient motion detection through state controllability", *Int. Conf. Accoustics, Speech and Signal Processing* (ICASSP), Kyoto, Japan, 2012.

- E. Younessian and **D. Rajan**, "Scene signatures for unconstrained news video stories", *Multimedia Modeling* (MMM), Klagenfurt, Austria, 2012.

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Editorial Board, EURASIP Journal on Advances in Multimedia.

Journal Reviewer - IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, IEEE Transactions on Neural Networks, IEEE Transactions on Circuits, Systems and Video Technology, Journal of Visual Communications and Image Representation, The Computer Journal, ACM Multimedia Systems Journal, Multimedia Tools and Applications, EURASIP Journal on Applied Signal Processing, Journal of Circuits, Systems and Signal Processing.

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