

## Karan Sikka

Computer Vision Scientist, SRI International

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## Education

- *PhD, ECE, 2016*
  - Advisor: Dr. Marian S. Bartlett
  - Machine Perception Lab
  - Thesis: Latent Dynamic Space-Time Volumes for Predicting Human Facial Behavior in Videos
- *MS, ECE, 2012*  
University of California, San Diego
- *B.Tech., ECE, 2010*  
Indian Institute of Technology Guwahati

## Publications

- Mithun, N., Sikka, K., Chiu, H., Samarasekera, S., Kumar, R. (2020). RGB2LIDAR: Towards Solving Large-Scale Cross-Modal Visual Localizations (ACMM). (**Best Paper Candidate**)
- Sikka, K., Silberfarb, A., Byrnes, J., Sur, I., Chow, E., Divakaran, A., Rohwer, R. (2020). Deep Adaptive Semantic Logic (DASL): Compiling Declarative Knowledge into Deep Neural Networks (ArXiv).
- Kruk, J., Lubin, J., Sikka, K., Lin, X., Jurafsky, D., Divakaran, A. (2019). Integrating Text and Image: Determining Multimodal Document Intent in Instagram Posts. Conference on Empirical Methods in Natural Language Processing (EMNLP).
- Ray, A., Sikka, K., Divakaran, A., Lee, S., Burachas, G. (2019). Sunny and Dark Outside?! Improving Consistency in VQA through Entailed Question Generation. Conference on Empirical Methods in Natural Language Processing (EMNLP).
- Datta, S., Sikka, K., Roy, A., Ahuja, K., Parikh, D., Divakaran, A. (2019). Align2Ground: Weakly Supervised Phrase Grounding Guided by Image-Caption Alignment. International Conference on Computer Vision (ICCV).
- Kaur, P., Sikka, K., Wang, W., Belongie, S., Divakaran, A. (2019). FoodX-251: A Dataset for Fine-grained Food Classification. Computer Vision and Pattern Recognition Workshop (CVPRW).
- Seymour, Z., Sikka, K., Chiu, H., Samarasekera, S., Kumar, T. (2019). Semantically-Aware Attentive Neural Embeddings for Image-based Visual Localization. British Machine Vision Conference (BMVC).
- Sikka, K., Bramer L., Divakaran, A. (2019). Deep Unified Multimodal Embeddings for Understanding both Content and Users in Social Media Networks(ArXiv).
- Bansal, A., Sikka, K., Sharma, G., Chellapa, R., Divakaran, A. (2018). Zero-Shot Object Detection (ECCV).
- Ahuja, K., Sikka, K., Roy, A., Divakaran, A. (2018). Understanding Visual Ads by Aligning Symbols and Objects using Co-Attention (CVPRW).
- Kaur, P., Sikka, K., Divakaran, A. (2017). Combining Weakly and Weakly Supervised Learning for Classifying Food Images (ArXiv).
- Kar, A., Rai, N., Sikka, K., Sharma, G. (2017). AdaScan: Adaptive Scan Pooling in Deep Convolutional Neural Networks for Human Action Recognition in Videos (CVPR).
- Sikka, K., Sharma, G. (2017). Discriminatively Trained Latent Ordinal Model for Video Classification (IEEE PAMI).

- Malmir, M., Sikka, K., Forster, D., Fasel, I., Movellan, J., Cottrell, W, Garrison. (2017). Deep Active Object Recognition by Joint Label and Action Prediction (CVIU).
- Sikka, K., Sharma, G., Bartlett, M. (2016). LOMo: Latent Ordinal Model for Facial Analysis in Videos (CVPR). (**Spotlight Presentation**)
- Malmir, M., Sikka, K., Forster, D., Movellan, J., Cottrell, W, Garrison. (2015). Deep Q-learning for Active Recognition of GERMS: Baseline Performance on a Standardized Dataset for Active Learning (BMVC). (**Acceptance Rate: 33%**)
- Sikka, K., Giri, R., Bartlett, M. (2015). Joint Clustering and Classification for Multiple Instance Learning (BMVC). (**Acceptance Rate: 33%**)
- Sikka, K., Dhall, A., Bartlett, M. (2015). Exemplar Hidden Markov Models for Classification of Facial Expressions in Videos (CVPRW).
- Sikka, K., Ahmed, A., Diaz, D., Goodwin, M., Craig, K., Bartlett, M., Huang, J. (2015). Automated Assessment of Children's Post-Operative Pain Using Computer Vision (Pediatrics). (**Impact Factor: 5.3**)
- Dhall, A., Joshi, J., Sikka, K., Goecke, K. and Sebe, N. (2015). The More the Merrier: Analysing the Affect of a Group of People In Images (IEEE FG).
- Sikka, K. (2014). Facial Expression Analysis for Estimating Pain in Clinical Settings (ICMI, Doctoral Consortium).
- Dhall, A., Goecke, R., Joshi, J., Sikka, K. and Gedeon, T. (2014). Emotion recognition in the wild challenge 2014: Baseline, data and protocol (ICMI).
- Sikka, K., Dhall, A. and Bartlett, M. (2014). Weakly Supervised Pain Localization and Classification with Multiple Segment Learning. The Best of Face and Gesture 2013 (Image and Vision Computing). (**Impact Factor: 1.6**)
- Dhall, A., Sikka, K., Littlewort, G., Goecke, R. and Bartlett, M. (2014). A Discriminative Parts Based Model Approach for Fiducial Points Free and Shape Constrained Head Pose Normalisation In The Wild (WACV). (**Acceptance Rate: 40%**)
- Sikka, K., Dykstra, K., Sathyanarayana, S., Littlewort, G. and Bartlett, M. (2013). Multiple Kernel Learning for Emotion Recognition in the Wild. ICMI'13. (**Best Paper Award**)
- Sikka, K., Dhall, A., and Bartlett, M. (2013). Weakly Supervised Pain Localization using Multiple Instance Learning. IEEE FG'13. (**Best Student Paper Honorable Mention Award**) (Acceptance Rate (Oral): 12%)
- Sikka, K., Wu, T., Susskind, J., and Bartlett, M. (2012). Exploring Bag of Words Architectures in the Facial Expression Domain (ECCV Workshops). (Oral Presentation, Acceptance Rate: 33%)
- Singh, P. K., Sinha, N., Sikka, K., and Mishra, A. K. (2011). Texture information-based hybrid methodology for the segmentation of SAR images. International Journal of Remote Sensing (Taylor and Francis).
- Sikka, K., and Deserno, T. M. (2010). Comparison of algorithms for ultrasound image segmentation without ground truth (SPIE Medical Imaging).
- Sikka, K., Sinha, N., Singh, P. K., and Mishra, A. K. (2009). A fully automated algorithm under modified FCM framework for improved brain MR image segmentation (Magnetic resonance imaging).

## Professional Experience

- Stanford Research Institute (SRI International), Princeton, New Jersey, USA, Jan'16-Mar'16  
– *Student Associate, Vision and Learning Group*
- Qualcomm R&D, San Diego, California, USA, Jun'11-Sept'11

- *Augmented Reality Team*
- *Interest point detector and local features*
- Medical Informatics Lab, RWTH Aachen, Germany May'09-July'09
  - *Summer Intern*
  - *Unsupervised algorithms for comparing segmentation maps*
  - *Advisor: Prof. Thomas M. Deserno, Dept. of Medical Informatics*

## Honors

**Best Student Paper Honorable Mention Award** at IEEE International Conference on Automatic Face and Gesture Recognition 2013 (IEEE FG).

**Best Paper Award** at EmotiW'13 Challenge, International conference on Multimodal Interaction 2013 (ICMI).

Runner's up at EmotiW'13 Challenge, International conference on Multimodal Interaction 2013 (ICMI).

Awarded a travel grant at International Conference on Multimodal Interaction 2014 (ICMI) (Doctoral Consortium).

Jacobs Scholarship UCSD- three year fellowship- highest form of recognition for any PhD candidate in ECE Dept.

Awarded travel grant at IEEE Automatic Face and Gesture Recognition, 2013 (IEEE FG) (Doctoral Consortium).

Awarded an SPIE Contingency Student Travel Grant for SPIE Medical Conference, 2010.

DAAD- German Academic Exchange Service, Undergraduate Internships, 2009.

## Languages

MATLAB, Python, C++, Tensorflow.

## Relevant Courses

Deep Learning (Stanford CS231 online), Statistical Learning, Parameter Estimation, Convex Optimization, Digital Signal Processing, Computer Vision- Structure from Motion and Object Recognition, Bayesian Methods, Random Processes, Wavelets.

## Workshop/Challenge Organizer

Organizer, iFood 2018 Challenge, FGVC Workshop, CVPR 2018, Salt Lake City, USA

Organizer, Emotion Recognition In The Wild Challenge and Workshop (EmotiW 2014), ICMI 2014

## Conference Reviewer/Program Committee

ICML, NIPS, ICLR, AAAI

ECCV, CVPR, ICCV, WACV, ACCV

ACMMM (2019, 2020 Area Chair)

ACII, ICMI

## Journals Reviewer

Transactions on Pattern Analysis and Machine Intelligence

Transactions on Image Processing  
Transactions on Neural Networks  
Transaction on Affective Computing  
Transaction on Multimedia  
Computer Vision and Image Understanding  
International Journal on Computer Vision  
Pattern Recognition Letters  
Image and Vision Computing

### **Technical Talks**

Invited speaker at Madima workshop, IJCAI 2018  
Computer Vision and Pattern Recognition Conference (CVPR), Salt Lake City, USA, 2018  
Arizona State University, Phoenix, USA, 2018  
Computer Vision and Pattern Recognition Conference (CVPR), Las Vegas, USA, 2016  
Indian Institute of Technology Kanpur (IIT Kanpur), India, 2016.  
Max Plank Institute of Informatics, Saarbrueken, Germany, 2016  
Stanford Research Institute (SRI) International, Princeton, USA, 2016  
Computer Vision and Pattern Recognition Conference (CVPR), Boston, USA, 2015  
Imperial College London (ICL), London, UK, 2015  
International Conference on Multimodal Interaction (ICMI), Istanbul, Turkey, 2014  
Automatic Face and Gesture Recognition (IEEE FG), Shanghai, China, 2013  
European Conference on Computer Vision (ECCV), Florence, Italy, 2012  
University of California San Diego, San Diego, USA, 2012

**References** available on request

November 17, 2020