Subarna Tripathi

✉ *subarna.tripathi@gmail.com*
🖥 *https://subarnatripathi.github.io/*

I am a Principal Engineer at Intel and leading the Visual Algorithms Research team with a focus on long-term video understanding and generation, structured and multimodal learning at Intel AI Lab. My additional responsibilities include making strategies and overseeing Intel's global university investments in AI.

Education

2013–2018	**PhD, Electrical and Computer Engineering**, *University of California San Diego*, USA.
Dissertation	**Improving Object Detection and Segmentation by Utilizing Context**
2007–2011	**MS Research, Electrical Engineering**, *Indian Institute of Technology, Delhi*, India.
2001–2005	**BTech, Computer Science and Engineering**, *West Bengal University of Technology*, India.

Professional & Research Experiences

May 2018 – present	**Principal Engineer, AI Research Scientist/Manager**, Visual Algo research @Intel Labs. Structured video and multimodal representation learning.
January 2023 – present	**Industry Liaison**, *Technical Advisory Board Member*, Semiconductor Research Corporation. Overseeing Intel's academic funding for AI Research
Jun 2013 – Mar 2018	**Graduate Research Assistant**, UC San Diego. Improving Object Detection and Segmentation by utilizing contexts.
Sept 2016– to Dec 2016	**Research Intern**, Qualcomm Multimedia R&D, San Diego, USA. A low-complexity Object-Detection model using Deep CNN with TensorFlow-Slim
Jun 2016– to Sept 2016	**Research Intern**, Google Research and Machine Intelligence, Seattle, USA. Person instance segmentation with human pose using Deep CNN with TF-Slim. Follow-up work used in Portrait Mode of Pixel Phones
Jun 2015 – Sept 2015	**Research Intern**, Microsoft Research, Redmond, USA. Self-calibrating eye-gaze tracking for head mounted virtual reality systems.
May 2006 – Oct 2012	**Technical Leader**, STMicroelectronics, Noida and Bangalore, India. Computer Vision, Stereo Vision, Machine Learning, Object Tracking, Video Compression - applied research projects in the Advanced System Technology (AST) group.
Jul 2005 – May 2006	**Member of Technical Staff**, Interra Systems, Noida, India. I developed TraceViewer, MP4/3GPP analyzer for Interra's *Vega* Video Analyzer.

Selected Publications

Papers **Remark**, *For full paper list see:*, Google Scholar Profile.

[42] **Advancing Video Temporal Comprehension through Grounded Objects**, *Tz-Ying Wu, Sharath Nittur Sridhar, and Subarna Tripathi*, WACV, 2026.

[41] **Toward Scalable Video Narration: A Training-free Approach using Multimodal Large Language Models**, *Tz-Ying Wu and Tahani Trigui and Sharath Nittur Sridhar and Anand Bodas and Subarna Tripathi*, CVAM workshop @ ICCV, 2025.

[40] **ByDeWay: Boost Your multimodal LLM with DEpth prompting in a training-free Way**, *Rajarshi Roy and Devleena Das and Ankesh Banerjee and Arjya Bhattacharjee and Kousik Dasgupta and Subarna Tripathi*, CVAM workshop @ ICCV, 2025.

[39] **Long-form Reasoning for Keystep Recognition using Graph Neural Networks**, *Julia Lee Romero and Kyle Min and Subarna Tripathi and Morteza Karimzadeh*, ICCVW, 2025.

[38] **Keystep Recognition using Graph Neural Networks**, *Julia Lee Romero, Kyle Min, Subarna Tripathi, and Morteza Karimzadeh*, Keystep recognition challenge winner, EgoVis 2025.

[37] **EASG-Bench: Video Q&A Benchmark with Egocentric Action Scene Graphs**, *Ivan Rodin and Tz-Ying Wu and Kyle Min and Sharath Nittur Sridhar and Antonino Furnari and Subarna Tripathi and Giovanni Maria Farinella*, ICCVW, 2025.

[36] **Ego-VPA: Egocentric Video Understanding with Parameter-efficient Adaptation**, *Tz-Ying Wu, Kyle Min, Subarna Tripathi, and Nuno Vasconcelos*, WACV, 2025.

[35] **LAVITI- Constrative Language-Video-Time Pretraining**, *Hengyue Liu, Kyle Min, Hector A Valdez, Subarna Tripathi*, EgoVis workshop @ CVPR, 2024.

[34] **SViTT-Ego: A Sparse Video-Text Transformer for Egocentric Video**, *Hector A Valdez, Kyle Min, and Subarna Tripathi*, ArXiv, 2024.

[33] **VideoSAGE: Video Summarization with Graph Representation Learning**, *JM Rojas Chaves, and Subarna Tripathi*, CVPRW, 2024.

[32] **Action Scene Graphs for Long-Form Understanding of Egocentric Videos**, *Ivan Rodin*, Kyle Min*, Antonino Furnari*, Subarna Tripathi, and Giovanni Maria Farinella*, CVPR 2024.

[31] **Unbiased video scene graph generation**, *Sayak Nag, Kyle Min, Subarna Tripathi, Amit K. Roy-Chowdhury*, CVPR 2023.

[30] **SViTT: Temporal Learning of Sparse Video-Text Transformer**, *Yi Li, Kyle Min, Subarna Tripathi, Nuno Vasconcelos*, CVPR 2023.

[29] **Single-Stage Visual Relationship Learning using Conditional Queries**, *Alakh Desai, Tz-Ying Wu, Subarna Tripathi, Nuno Vasconcelos*, NeurIPS, 2022.

[28] **Learning Long-Term Spatial-Temporal Graphs for Active Speaker Detection**, *Kyle Min*, Sourya Roy*, Subarna Tripathi, Tanaya Guha, and Somdeb Majumdar*, ECCV 2022.

[27] **Text Spotting Transformers**, *Xiang Zhang, Yongwen Su, Subarna Tripathi and Zhuowen Tu*, CVPR, 2022.

[26] **Joint Hand Motion and Interaction Hotspots Prediction from Egocentric Videos**, *Shaowei Liu, Subarna Tripathi, Somdeb Majumdar, Xiaolong Wang*, CVPR, 2022.

[25] **Exploiting Long-Term Dependencies for Generating Dynamic Scene Graphs**, *Shengyu Feng, Subarna Tripathi, Hesham Mostafa, Marcel Nassar, Somdeb Majumdar*, WACV 2023.

[24] **Towards Single Image Panoptic 3D Parsing in the Wild**, *Sainan Liu, Vincent Nguyen, Yuan Gao, Subarna Tripathi, Zhuowen Tu*, arXiv preprint, arXiv:2021.

[23] **Self-Supervision for Scene Graph Embeddings**, *Brigit Schroeder, Adam Smith, Subarna Tripathi*, WiML at NeurIPS, 2021.

[22] **In Defense of Scene Graphs for Image Captioning**, *Kien Nguyen*, Subarna Tripathi*, Tanaya Guha, Bang Du, Truong Nguyen*, ICCV 2021.

[21] **Learning of Visual Relations: The Devil is in the Tails**, *Alakh Desai*, Tz-Ying Wu*, Subarna Tripathi, Nuno Vasconcelos*, ICCV 2021.

[20] **Dynamic Emotion Modeling with Learnable Graphs and Graph Inception Network**, *Amir Shirian, Subarna Tripathi, Tanaya Guha*, IEEE Trans on Multimedia, 2021.

[19] **Structured-Query based Image Retrieval Using Scene Graphs**, *Brigit Schroeder, Subarna Tripathi*, CVPR workshop DIRA, 2020.

[18] **Generating Images in Compressed Domain using Generative Adversarial Networks**, *B. Kang, S. Tripathi, and T. Nguyen*, IEEE Access, 2020.

[17] **Layout Compositions from Attributed Scene Graphs**, *Subarna Tripathi, and Anahita Bhiwandiwalla*, NeurIPS workshop (WiML), 2019.

[16] **Triplet-Aware Scene Graph Embedding**, *Brigit Schroeder, Subarna Tripathi, and Hanlin Tang*, ICCV workshop (SGRL), 2019.

[15] **Heuristics for Image Generation from Scene Graphs**, *Subarna Tripathi, Anahita Bhiwandiwalla, Alexei Bastidas, and Hanlin Tang*, ICLR workshop (LLD), 2019.

[14] **Compact scene graphs for layout composition and patch retrieval**, *Subarna Tripathi, Sharath Nittur Sridhar, Sundaresan and Hanlin Tang*, CVPRW (CEFRL), 2019.

[13] **Using Scene Graph Context to Improve Image Generation**, *Subarna Tripathi, Anahita Bhiwandiwalla, Alexei Bastidas, and Hanlin Tang*, CVPRW (WiCV), 2019.

[12] **PartNet: A Large-scale Benchmark for Fine-grained and Hierarchical Part-level 3D Object Understanding**, *Kaichun Mo, Shilin Zu, Angel X. Chang, Li Yi, Subarna Tripathi, Leonidas J. Guibas, Hao Su*, CVPR, 2019.

[11] **Pose2Instance: Harnessing Keypoints for Person Instance Segmentation**, *S. Tripathi, M. Collins, M. Brown, and S. Belongie*, arXiv preprint arXiv:1704.01152.

[10] **Correction by Projection: Denoising Images by Inferring Latent Vectors from Generative Adversarial Networks**, *S. Tripathi, Z.C. Lipton, and T. Nguyen*, arXiv preprint arXiv:1803.04477.

[9] **LCDet: Low-Complexity Fully-Convolutional Neural Networks for Object Detection in Embedded Systems**, *S. Tripathi, G. Dane, B. Kang, V. Bhaskaran, and T. Nguyen*, CVPRW, 2017.

[8] **Low-Complexity Object Detection with Deep Convolutional Neural Network for Embedded Systems**, *S. Tripathi, B. Kang, G. Dane, and T. Nguyen*, SPIE, 2017.

[7] **Precise Recovery of Latent Vectors from Generative Adversarial Networks**, *Z.C. Lipton, and S. Tripathi*, ICLR 2017, Workshop track.

[6] **A Statistical Approach to Continuous Self-Calibrating Eye Gaze Tracking for Head-Mounted Virtual Reality Systems**, *S. Tripathi, and B. Guenter*, WACV 2017, (**The Best Paper Award**).

[5] **Context Matters: Refining Object Detection in Video with Recurrent Neural Networks**, *S. Tripathi, Z. Lipton, S. Belongie, and T. Nguyen*, BMVC, 2016.

[4] **Detecting Temporally Consistent Objects in Videos through Object Class Label Propagation**, *S. Tripathi, S. Belongie, Y. Hwang, and T. Nguyen*, WACV, 2016.

[3] **Semantic Video Segmentation : Exploring Inference Efficiency**, *S. Tripathi, S. Belongie, Y. Hwang, and T. Nguyen*, IEEE ISOCC, 2015.

[2] **Real-time Sign Language Fingerspelling Recognition using Convolutional Neural Networks from Depth map**, *B. Kang, S. Tripathi, and T. Nguyen*, ACPR, 2015.

[1] **Improving Streaming Video Segmentation with Early and Mid-Level Visual Processing**, *S. Tripathi, Y. Hwang, S. Belongie, and T. Nguyen*, WACV, 2014.

Patents [8] **Long duration structured video action segmentation**, *AD Rhodes, B Min, S Tripathi, G Raffa, S Biswas* , US Patent App. 18/459,824.

[7] **Moving object detection and classification image analysis methods and systems**, *S. Tripathi, K Chen, T Nguyen, and Y Hwang*, US Patent App. 15/872,378.

[6] **Method for Detecting a Straight Line in a Digital Image**, *L. Magri, B. Rossi, S. Tripathi, P. Fragneto and E. Piccinelli*, US 9,245,200 B2, Grant.

[5] **GOP-Independent Dynamic Transcoder Bitrate Controller**, *S. Tripathi, and E. Piccinelli*, US 8,913,658 B2, Grant.

[4] **Advance video coding with perceptual quality scalability for regions of interest**, *S. Chaudhury, S. Tripathi, and M. Mathur*, US 9,626,769 B2, Grant.

[3] **Object Tracking**, *S. Chaudhury, S. Tripathi, and S. Dutta Roy*, US 10178396 B2, Grant.

[2] **System and method for object based parametric video coding**, *S. chaudhury, M. Mathur, A. Khandelia, S. Tripathi, B. Lall, S. Dutta Roy, and S. Gorecha*, US 8,848,802 B2, Grant.

[1] **A Method and System for Determining A Macroblock Partition For Data Transcoding**, *S. Tripathi, K. Saha and E. Piccinelli*, US 9,197,903 B2, Grant.

Professional Activities

SRC Services INTEL'S Center Lead Liaison for JUMP2.0 COCOSYS, The AI Hardware Technical Advisory Board (TAB) member since 2023.

Co-organizer ICCV'25 WORKSHOP Computer Vision and Advertisement and Marketing (CVAM);

Co-organizer CVPR'20 WORKSHOP Diagram Image Retrieval and Analysis (DIRA): Representation, Learning, and Similarity Metrics;

Co-leader WiML UNWORKSHOP@ICML'21 Connecting Novel Perspectives of GNNs: A Cross-domain Overview;

Guest speaker DEEP LEARNING COURSE @University of Catania (2022, 2023, 2024)

Mentoring session	WiCV@CVPR'21, WiML@NeurIPS'21, UCSD ECE AMP 2020-2022
PC member/ Reviewer	CVPR, ICCV, ECCV, ACCV, SIGGRAPH, WACV, AAAI, IJCV, IEEE Journals
Area Chair	WiML @NeurIPS 2017-to date

Media Coverage

Press	**PartNet featured in IEEE Spectrum, The Robot Report, Robotics Business Review, Venture-Beat, TechCrunch**.
Intel Internal	**Intel Newsroom and Intel AI Blog**.
Others	**Diversity in Deep Learning Research Panelist**, *Mentions in KDNuggets and Medium*.

Co-curricular and Extra-curricular Activities

Scholarships	**National Scholarship of Merit**, 1999, 2001, India.
Awards	**Google Grace Hopper Celebration Award, Travel scholarship**, 2016.
Mentoring	**Intel Ignite Companies**, *AI Global Impact Festival*, Grad and Undergrad Students. Mentoring at WiML, WiCV, AI Impact Festival Winners
Thesis mentor	**MS and bachelors thesis committee members**, *University of Colorado Boulder, Indian Institute of Science - Bangalore, Kalyani Govt Engineering College*.
Courses	**Computer Vision, Machine Learning, Pattern Recognition, Image Processing**.
Summer Schools	**DLSS & RLSS'17 Montreal, ICVSS'11 Sicily, IMLSS'10 Bangalore**.