

Arulkumar S

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Education

- Jul 2015 – Apr 2022* ■ M.S & PhD (Computer Science and Engineering - CGPA: 8.89*)
in Computer Vision and Machine Learning
Thesis Title: Modules for Improved Deep Learning-based Matching in Vision Tasks
Indian Institute of Technology Madras
- Aug 2006 – Apr 2010 ■ B.E., (Computer Science and Engineering - CGPA: 9.02)
Coimbatore Institute of Technology, Anna university
- Jul 2005 – Apr 2006 ■ 12th Standard School Education (Percentage: 92.42%)
Gandhiji Government Higher Secondary School, Sikkampalayam
- Jul 2003 – Apr 2004 ■ 10th Standard School Education (Percentage: 95.6%)
Gandhiji Government Higher Secondary School, Sikkampalayam

Employment History

- May 2010 – Jul 2015 ■ Senior Software Engineer, Automotive Domain (Passive Safety - Airbags)
- Robert Bosch Engineering and Business Solutions Ltd (Bangalore, Coimbatore)
Robert Bosch GmbH (Ditzingen, Germany)
- Development of Test framework for Airbags ECUs (Languages used: VC++.Net, C#.Net, C++, Perl, Java)
 - Application drivers using CAN Flexray protocols for ECU Diagnosis
 - Vehicle crash emulation, evaluation and verification according to Airbags ECU requirements

Research Publications

Journal Articles

- 1 Arulkumar Subramaniam, Jayesh Vaidya, Muhammed Abdul Majeed Ameen, Athira Nambiar, and Anurag Mittal. 'Co-segmentation Inspired Attention Module for Video-based Computer Vision Tasks'. arXiv preprint arXiv:2111.07370 (2021).

Conference Proceedings

- 1 Jayesh Vaidya, Arulkumar Subramaniam, and Anurag Mittal. 'Co-Segmentation Aided Two-Stream Architecture for Video Captioning.' Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV). 2022.
- 2 Arulkumar Subramaniam, Ashish Vaswani, and Niki Parmar. 'Self-Attention based Feature Extractors for 3D Object Detection in Point Clouds'. European Conference on Computer Vision (ECCV) - 2020 Workshop on Perception for Autonomous Driving. 2020.
- 3 Rahul Chakwate, Arulkumar Subramaniam, and Anurag Mittal. 'MARNet: Multi-Abstraction Refinement Network for 3D Point Cloud Analysis'. 2020.
- 4 Arulkumar Subramaniam*, Ajay Narayanan*, and Anurag Mittal. 'Feature Ensemble Networks with Re-ranking for Recognizing Disguised Faces in the Wild'. Proceedings of the International Conference on Computer Vision Workshop (ICCVW) - 2019 on Recognizing Disguised Faces in the Wild. Seoul, South Korea., 2019.

- 5 Arulkumar Subramaniam, Athira Nambiar, and Anurag Mittal. 'Co-segmentation Inspired Attention Networks for Video-based Person Re-identification'. Proceedings of the International Conference on Computer Vision (ICCV) - 2019. Seoul, South Korea., 2019.
- 6 Arulkumar Subramaniam*, Prashanth Balasubramanian*, and Anurag Mittal. 'NCC-Net: Normalized Cross Correlation Based Deep Matcher with Robustness to Illumination Variations'. IEEE Winter Conference on the Applications of Computer Vision (WACV) - 2018. Nevada, United States. Code: https://github.com/InnovArul/patchmatch_normxcorr [paper][video][poster], 2018.
- 7 Ashish Mishra, Vinay Verma, Arulkumar Subramaniam, Shiva Krishna Reddy, Piyush Rai, and Anurag Mittal. 'A Probabilistic Model for Zero-Shot and Few-Shot Action Recognition with Domain Adaptation'. IEEE Winter Conference on the Applications of Computer Vision (WACV) - 2018. Nevada, United States. [paper][video], 2018.
- 8 Arulkumar Subramaniam, Moitrey Chatterjee, and Anurag Mittal. 'Deep Neural Networks with Inexact Matching for Person Re-Identification'. Proceedings of the Neural Information Processing Systems (NIPS) - 2016. Barcelona, Spain. Code : https://github.com/InnovArul/personreid_normxcorr [paper][video][poster], 2016.
- 9 Arulkumar Subramaniam*, Vismay Patel*, Ashish Mishra, Prashanth Balasubramanian, and Anurag Mittal. 'Bi-modal First Impressions Recognition using Temporally Ordered Deep Audio and Stochastic Visual Features'. Proceedings of the European Conference on Computer Vision Workshop (ECCVW) - 2016 on Apparent Personality Analysis. Amsterdam, The Netherlands. Code: <https://github.com/InnovArul/first-impressions> [paper], 2016.

Research Area of Interest

1. Machine learning in Computer Vision, Deep learning
 - Inductive bias for vision tasks
 - Person Detection, Tracking and Identification in Surveillance systems
 - Self-supervised learning
2. Robotic vision, Intelligent systems, Self-driving cars
 - Sensor fusion, Depth estimation, Optical flow

Skills

Languages	Reading, writing and speaking competencies in English, Tamil.
Coding	Lua, GPU programming (Cuda C++), Python, Perl, VC++.Net, C#.NET, Java, R
Frameworks	Torch(Lua), PyTorch, TensorFlow, Caffe
Databases	Mysql
Web Dev	Html, CSS, JavaScript

Miscellaneous Experience

	One of the Admins in PyTorch forum
Nov 2020	Internship at Google (Mountain View) on the topic "Self-Attention Models for Object Detection in Self-Driving Cars"
Feb 2019	Awarded Prime Minister's fellowship for Doctoral Research from Science and Engineering Research Board (SERB), India
Jul 2018	Awarded Google PhD fellowship - 2018
Sep 2016	Received Travel Grant from Google for NIPS-2016 paper
Aug 2016	Ranked 2 nd in the ICPR-2016 (team: evolgen): ChaLearn Looking at People : First Impressions and Personality Traits recognition challenge (second round)
Jul 2016	Ranked 2nd in the ECCV-2016 (team: evolgen): ChaLearn Looking at People : First Impressions and Personality Traits recognition challenge (first round)
Apr 2006	Secured school First in Higher secondary school examination
Apr 2004	Secured school Third in Secondary school examination