

Arulkumar S

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Education

- Jul 2015 – May 2022 📌 M.S & PhD (Computer Science and Engineering - CGPA: 9.08)
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

- Nov 2019 – Feb 2020 📌 Intern at Google Brain, Mountain view

Topic: “Self-Attention based Feature Extractors for 3D Object Detection in Point Clouds” on Large-scale Waymo dataset. (Mentors: Niki Parmar, Ashish Vaswani)
- May 2010 – Jul 2015 📌 Senior Software Engineer, Automotive Domain (Passive Safety - Airbags)

Robert Bosch Engineering and Business Solutions Ltd (Coimbatore)
Robert Bosch GmBH (Ditzingen, Germany) -

Development of Test framework for Airbags ECUs (Languages used: VC++.Net, C#.Net, C++, Perl, Java)

Awards and Recognition

- 📌 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 2nd in the ECCV-2016, ICPR-2016 (team: evolgen): ChaLearn Looking at People : First Impressions and Personality Traits recognition challenge (first & second rounds)

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 Arulkumar Subramaniam, Moitreya Chatterjee, and Anurag Mittal. ‘Deep Neural Networks with Inexact Matching for Person Re-Identification’. Proceedings of the Neural Information Processing Systems (NeurIPS). Barcelona, Spain, [Code] [Paper][Video][Poster], 2016.

- 2 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) on Apparent Personality Analysis. Amsterdam, The Netherlands, [Code] [Paper][Ppt], 2016.
- 3 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). Nevada, United States, [Code] [Paper][Video][Poster], 2018.
- 4 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). Nevada, United States. [Paper][Video], 2018.
- 5 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) on Recognizing Disguised Faces in the Wild. Seoul, South Korea, [Paper][Ppt], 2019.
- 6 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). Seoul, South Korea [Code] [Paper][Poster], 2019.
- 7 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) Workshop on Perception for Autonomous Driving. [Paper][Video][Ppt], 2020.
- 8 Rahul Chakwate, Arulkumar Subramaniam, and Anurag Mittal. 'MARNet: Multi-Abstraction Refinement Network for 3D Point Cloud Analysis'. arXiv preprint arXiv:2011.00923. 2020.
- 9 Saikat Dutta, Arulkumar Subramaniam, and Anurag Mittal. 'Non-linear Motion Estimation for Video Frame Interpolation using Space-time Convolutions.' Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshop (CVPRW) on Learned Image Compression (CLIC). 2022.
- 10 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). [Paper][Poster][Ppt], 2022.

Research Area of Interest

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

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