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, Sokkampalayam
Jul 2003 – Apr 2004	10th Standard School Education (Percentage: 95.6%) Gandhiji Government Higher Secondary School, Sokkampalayam

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
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)
Apr 2006	Secured school First in Higher secondary school examination
Apr 2004	Secured school Third in Secondary school examination

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