Praveen Tirupattur, Ph.D. Candidate

Mail Scholar Github LinkedIn Twitter Website

Education

Aug 2017 – Aug 2024* **Ph.D. in Computer Science (GPA: 3.8)**
Center for Research in Computer Vision (CRCV)
University of Central Florida, Orlando, Florida, USA
Advisor: Prof. Mubarak Shah

Aug 2013 – Aug 2016 **M.Sc. in Intelligent Systems (GPA: 3.8)**
Technical University of Kaiserslautern, Kaiserslautern, Germany
Thesis title: *Violence Detection in Videos*.

Sep 2006 – Aug 2010 **B.Tech. in Computer Science (GPA: 3.4)**
Jawaharlal Nehru Technological University, Hyderabad, India

Experience

Research

Aug 2017 – Current **Graduate Research Assistant at CRCV**, UCF

- Deep Intermodal Video Analytics (**DIVA**) program by IARPA: Worked on video activity detection. Performed data pre-processing of large-scale multi-label and multi-class dataset for model training. Developed models for actor localization and action classification in untrimmed video sequences. Achieved first place in ActEV SDL 2020 challenge (ActivityNet Challange, CVPR-2020) and second position in TRECVid 2019 challenge.
- Gait Recognition by CTTSO: Worked on developing a Gait Recognition model using skeleton data and improved the performance of existing RGB-based models with feature fusion.
- Biometric Recognition and Identification at Altitude and Range (**BRIAR**) by IARPA: Contributed to the development of a person-identification model aimed at learning robust representations invariant to variations in the scale of individuals resulting from their distance from the camera. Worked on pre-processing of the training data and building the pipeline for inference and evaluation.

May 2023 – Aug 2023 **Research Intern at Amazon Inc.**

- Worked on representation learning for long-form video understanding with vision-language training.
- Explored the idea of leveraging pre-trained Large Language Models (LLMs) to improve temporal understanding of video models.

May 2022 – Aug 2022 **Research Intern at Pinterest Inc.**

- Worked on building a unified model for both image and video representation learning.
- Explored large-scale self-supervised training to learn representations for multiple visual modalities.
- Obtained improved performance over the in-house image-based model using the multi-modal training.

Jan 2016 – Aug 2016 **Master Thesis Student at German Research Center for AI (DFKI)**

- Focused on detecting various types of violent activities from videos using visual, semantic and audio features.
- Trained SVM classifiers on each modality and employed late-fusion to detect videos with violence.

*Expected

Experience (continued)

Software Development

Oct 2016 – July 2017 **Java Developer at XYRALITY GmbH**, Hamburg, Germany

- Worked on developing multi-player strategy games.
- Focused on back-end development working with Wonder frameworks and Web Objects.

Aug 2010 – Aug 2013 **Software Engineer at Progress Software**, Hyderabad, India

- Java and web development involving implementation of various features and bug fixing.
- Built POC for a new use-case involving integration of existing products and received the best employee award for my efforts.

Research Publications

Conference Proceedings

1. N. Siddiqui, **P. Tirupattur**, and M. Shah, "Dvanet: Disentangling view and action features for multi-view action recognition," in *Accepted to AAAI Conference*, 2024.
2. **P. Tirupattur**, R. Gupta, A. Yousaf, and M. Shah, "Under review," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024.
3. R. Modi, A. J. Rana, **P. Tirupattur**, *et al.*, "Video action detection: Analysing limitations and challenges," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2022, pp. 4911–4920.
4. M. N. Rizve, U. Demir, **P. Tirupattur**, *et al.*, "Gabriella: An online system for real-time activity detection in untrimmed security videos," in *2020 25th International Conference on Pattern Recognition (ICPR)*, IEEE, 2021, pp. 4237–4244, **[Best Paper Award]**.
5. **P. Tirupattur**, K. Duarte, Y. S. Rawat, and M. Shah, "Modeling multi-label action dependencies for temporal action localization," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2021, pp. 1460–1470, **[Oral Presentation]**.
6. **P. Tirupattur**, Y. S. Rawat, C. Spampinato, and M. Shah, "Thoughtviz: Visualizing human thoughts using generative adversarial network," in *Proceedings of the 26th ACM international conference on Multimedia*, 2018, pp. 950–958.

Patents

1. Y. S. Rawat, M. Shah, A. J. B. Rana, **P. Tirupattur**, and M. N. Rizve, *Methods of real-time spatio-temporal activity detection and categorization from untrimmed video segments*, US Patent 11,468,676, Oct. 2022.

Skills

Programming	Python, Java, C++
Deep learning frameworks	PyTorch, Keras, Tensorflow
Tools/Frameworks	OpenCV, Sci-kit, MATLAB
Languages	English, Telugu, Hindi, German (B1)

Awards and Achievements

2022 — 2^{nd} place, ActivityNet ActEV Challenge (CVPR)

2021 — 1^{st} place, ActivityNet ActEV SDL (CVPR)

2020 — 1^{st} place, ActivityNet ActEV SDL (CVPR)

- 2^{nd} place, TRECVID ActEV: Activities in Extended Video
- Best Paper Award at ICPR
- Won ASAPS Challenge, Contest-1 (NIST)

2019 — 2^{nd} place TRECVID ActEV: Activities in Extended Video

2017 — Awarded UCF ORC Doctoral Fellowship

Professional Activities

- Organized TinyAction ActivityNet Challenge (CVPR 2021, 2022)
- Mentored students of NSF Research Experience for Undergrad (REU) 2020, 2021 & 2022
- Reviewer for CVPR, ICCV, ECCV, CVIP, ACM-MM, IEEE Transaction on Multimedia, Machine Vision and Applications, etc.