Deep Patel

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EDUCATION

Towson University: B.S in Computer Science   Towson, MD, 2019

Dean's List (8X) | *summa cum laude* | GPA: 3.98/4.0

SELECTED PUBLICATIONS

[1] Y. Huang, A. Kadav, F. Lai, **D. Patel**, and H. P. Graf, "Learning higher-order object interactions for keypoint-based video understanding," *ICCV Workshop on Structured Representations for Video Understanding*, 2021. .

[2] K. Li, **D. Patel**, E. Kruus, and M. R. Min, "Source-free video domain adaptation with spatial-temporal-historical consistency learning," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun. 2023, pp. 14 643–14 652. .

[3] Y. Babazaki, K. Iwamoto, K. Takahashi, K. Li, **D. Patel**, E. Kruus, and H. P. Graf, "Heterogeneous feature fusion for improving performance of action detection," in *Journal of Physics: Conference Series*, IOP Publishing, vol. 2759, 2024, p. 012 001.

[4] C.-J. Chang, D. Li, **D. Patel**, P. Goel, H. Zhou, S. Moon, S. S. Sohn, S. Yoon, V. Pavlovic, and M. Kapadia, "Learning from synthetic human group activities," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024, pp. 21 922–21 932.

[5] X. Hu, K. Li, **D. Patel**, E. Kruus, M. R. Min, and Z. Ding, "Weakly-supervised temporal action localization with multi-modal plateau transformers," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024, pp. 2704–2713.

[6] C. Reich, B. Debnath, **D. Patel**, and S. Chakradhar, "Differentiable jpeg: The devil is in the details," in *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, Jan. 2024, pp. 4126–4135. .

[7] C. Reich, B. Debnath, **D. Patel**, T. Prangemeier, D. Cremers, and S. Chakradhar, "Deep video codec control for vision models," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024, pp. 5732–5741.

AWARDS

2023 NEC Labs **Business Contribution Award** for computer vision based construction monitoring.
2022 NEC Labs **Business Contribution Award** for deployment of action recognition on cloud.
2020 NEC Labs **Business Contribution Award** for smart video analytics in retail.
2017 Towson University Admissions Scholarship for **Outstanding Academic Achievements.**

WORK EXPERIENCE

NEC Labs America - ML Dept.   Princeton, NJ
Senior Associate Researcher   June 2023 - Present
Associate Researcher   Apr 2022 - June 2023

- Solve research problems in **video understanding & reasoning**, data streaming and **efficient AI**.
- Design and implement scalable and cost-efficient video streaming and processing pipelines.

NEC X - Eigen Team   Princeton, NJ
Contract Research Engineer   Sept 2019 - Apr 2022
- Implemented a **linux based firmware** for cloud video and audio streaming using wifi security cameras.
- Developed the production backend for action recognition system on **AWS**.

INSuRE - Johns Hopkins University - Applied Physics Lab   Baltimore, MD
ML Intern   Dec 2018 – May 2019
- Researched and developed a NLP based solution for detection of malicious weblinks and content.
- Integrated the deep learned model in the backend of a chrome extension using **RESTful APIs**.

Towson University - CS Dept.   Towson, MD
Research Assistant   August 2018 – May2019
- Performed **independent research** on detection and classification of edible wild plants using transfer learning.

Academic Service

Conference Reviewer: ICPR, ICASSP, ICCV-W, ASPLOS, ACM-MM, WACV, CVPR-W
Journal Reviewer: IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**)
Program Committee:
- Vision and Language Algorithmic Reasoning Workshop (**VLAR**) at ICCV'23
- Multi Modal Algorithmic Reasoning Workshop (**MAR**) at CVPR'24

Selected Patents

[1] **D. Patel**, G. Milione, K. Li, F. Lai, and E. Kruus, *Cut-paste training augmentation for machine learning models*, US Patent App. 18/439,242, Aug. 2024.

[2] **D. Patel**, A. Niculescu-Mizil, I. Melvin, and M. Seonghyeon, *Multi-camera machine learning view tracking*, US Patent App. 18/505,761, May 2024.

[3] B. Debnath, C. Reich, **D. Patel**, and S. Chakradhar, *Analytics-aware video compression for teleoperated vehicle control*, US Patent App. 18/439,341, Aug. 2024.

[4] K. Li, **D. Patel**, E. Kruus, and R. Min, *Machine learning of spatio-temporal manifolds for source-free video domain adaptation*, US Patent App. 18/504,469, May 2024.

[5] K. Li, R. Min, **D. Patel**, E. Kruus, and X. Hu, *Weakly supervised action localization*, US Patent App. 18/363,175, Feb. 2024.

Skills

Programming:	**C**, **Python**, C++, JavaScript, Java, Kotlin, Scala, Perl
Databases / ETL:	SQL, **PostgreSQL**, SQLite, DynamoDB, **GraphQL**
ML / Deep Learning:	**Pytorch**, Numpy, MLflow, OpenCV, TensoRT, Triton Inference Server
Others:	**Linux**, Windows, **AWS**, Google Cloud, Docker, Kubernetes, Shell Scripting, Postman, Git, **Firmware/Embedded development**