MANOJ ACHARYA

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RESEARCH INTERESTS

Machine Learning (Deep Learning), Computer Vision, Object Detection, Natural Language Processing (NLP), Lifelong/Continual Learning, Vision and Language, Visual Question Answering (VQA) , Open World Learning.

EDUCATION

2016 – 2022	Ph.D., Imaging Science Chester F. Carlson Center for Imaging Science Rochester Institute of Technology, Rochester, NY Dissertation: "Towards Multimodal Open-World Learning in Deep Neural Networks" Adviser: Christopher Kanan
2009 – 2013	B.E, Electronics and Communication Engineering Institute of Engineering Lalitpur, Nepal Project I: Image Processing Based "Ball and Beam" control system Project II: Real Time Nepali Sign Language Recognition using Neural Network

SCHOLARSHIPS & AWARDS

- **Second position** in the SODA10M Continual Object Detection Challenge at ICCV 2021 (Cash prize worth of 2500$)
- **First position** in the Facebook OpenEds Challenge, ICCV 2019 AR/VR research workshop (Cash prize worth of 5000$ and travel scholarship)
- **Travel grant** for the AAAI 2019 conference at Hawaii.
- **Best Student Poster Award** at the RIT graduate showcase 2019.
- RIT Graduate Student Scholarship, 2016.
- **Second position** in the Ethical Penetration Testing Challenge, LOCUS 2011.
- Four years of merit based scholarship for outstanding students at IOE, Pulchowk.

PUBLICATIONS (* = Equal Contribution)

- **Acharya, M.**, Roy, A., Koneripalli, K., Jha, S., Kanan, C., & Divakaran, A. (2022). Detecting out-of-context objects using contextual cues. In the International Joint Conference On Artificial Intelligence (IJCAI-ECAI 2022).

[1] Updated on Jan 19,, 2023

- **Acharya, M.,** & Kanan, C. (2021). 2nd Place Solution for SODA10M Challenge 2021--Continual Detection Track. In IEEE/CVF International Conference on Computer Vision Workshop (ICCVW 2021). [Second Place Winner]
- **Acharya, M.,** Hayes, T. L., & Kanan, C. (2020). "RODEO: Replay for online object detection." In the British Machine Vision Conference (BMVC 2020).
- Hayes, T.*, Kafle, K.*, Shrestha, R.*, **Acharya, M.**, and Kanan, C.(2020). REMIND your neural network to prevent catastrophic forgetting. In the European Conference on Computer Vision (ECCV 2020).
- Chaudhary, A. K.*, Kothari, R.*, **Acharya, M.***, Dangi, S., Nair, N., Bailey, R., Kanan, C. & Pelz, J. B. (2019). RITnet: real-time semantic segmentation of the eye for gaze tracking. In IEEE/CVF International Conference on Computer Vision Workshop (ICCVW 2019). [Winning Submission]
- **Acharya, M.,** Jariwala, K., & Kanan, C. (2019). "VQD: Visual query detection in natural scenes." In Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2019).
- **Acharya, M.,** Kafle, K., and Kanan, C. (2019). "TallyQA: Answering complex counting questions." In Proceedings of the AAAI Conference on Artificial Intelligence. (AAAI 2019). [Spotlight presentation]
- **Acharya, M.,** & Pant, D. R. (2015). "Computer Vision Based Hand Gesture Recognition For Speech Disabled Persons." In Journal of the Institute of Engineering 11.1 (2015): 30-35.

ABSTRACTS AND POSTERS WITHOUT PROCEEDINGS

- “Know *thy* Enemy: Invasive Species Detection in High Resolution Imagery”, WNYISPW 2019. (Poster)
- “TallyQA: Answering Complex Counting Questions”, ViGIL workshop at NeurIPS 2018 (Poster)

TALKS

- Guest Lecturer at Khwopa College of Engineering, Nepal - Talked about Introduction to AI and Lifelong Learning.
- Guest Lecturer for RIT’s Deep Learning Course designed for graduate students. - Talked about Object detection and Language+Vision.
- “Robust, real-time Semantic Segmentation of the Eye for Gaze Tracking”, Frameless Symposium 2019.
- On Unifying Deep Generative Models, Mathematics for Deep Learning Graduate Reading Group 2019.
- “TallyQA: Answering Complex Counting Questions”, Reasoning and Complex QA Workshop at AAAI 2019.

WORK EXPERIENCE

2022 - 2023	Applied Scientist, Amazon Highlights: Develop and vend Deep Learning based models that learn universal semantic representations of Amazon specific entities. Keywords: Large Language Models, NLP, Multi-task/modal learning
2021	Research Intern , SRI International Highlights: Graph Neural Networks, Novelty, GCN, Graph-Transformer
2017 – 2022	Graduate Research Assistant, RIT
2014 – 2015	Software Developer, IT Expert Highlights: Developed early prototype software for automating dental RCT surgeries by generating 3D visualizations.
2013 – 2014	Researcher, PowerTech Nepal Mentor: Surendra Mathema Highlights: Developed need based embedded IoT based solutions for hospitals, micro-hydro projects, etc.

TEACHING EXPERIENCE

2018	Graduate Teaching Assistant, Rochester Institute of Technology **Class:** Deep Learning for Computer Vision
2016 - 2017	Teaching Assistant, Rochester Institute of Technology **Classes:** Image Processing and Computer Vision I Image Processing and Computer Vision II
2013	Lecturer, Thapathali Engineering College, Nepal **Class:** Image processing and pattern recognition

PROFESSIONAL SERVICES

Conference Reviews:

- ACL: 2021, 2020, 2019
- MICCAI 2021
- AAAI 2020
- BMVC 2020
- NAACL: 2019, 2018
- EMNLP 2019
- NeurIPS 2019
- ECCV 2018

TECHNICAL SKILLS

Languages: English, Nepali (mother tongue), Hindi

Programming Languages: Python, C , C++, MATLAB
Operating Systems: Linux, Microsoft Windows, Mac OS
Deep/ML Toolboxes: Pytorch, MatConvNet, Keras
Scientific Computing Tools: Numpy, Scipy, Scikit-learn, OpenCV
Web Development: HTML, CSS, JavaScript
Other Applications: Git, Linux Shell Scripting, LATEX