Hareesh Ravi

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RESEARCH INTERESTS

Joint Understanding of Language & Vision, Cross Modal Generation and Retrieval, Multi-Modal Story Comprehension, Visual Storytelling, Computer Vision, Natural Language Processing, Deep Learning.

EDUCATION

Doctor of Philosophy (2016–Present)
Computer Science
Rutgers, The State University of New Jersey
Advisor(s): Dr. Mubbasir Kapadia & Dr. Gerard De Melo | *Lab:* IVI

Bachelor of Engineering (2009–2013)
Instrumentation and Control Engineering
Anna University, Chennai, India

PUBLICATIONS

Ravi, H., Kafle, K., Cohen, S., Brandt, J., Kapadia, M. Creative Visual Storytelling, **Under Preparation**, *ICCV 2021.*

Ravi, H., Vithlani, P., Modi, A., Kapadia, M., Visualize Your Story: A Framework for Many to Many Story Illustration, **To Be Submitted**, *ACL 2021.**

Ravi, H., Alikhani, M., Han, F., Kapadia, M., Pavlovic, V., Stone, M., Exploring Cross-Modal Coherence for Text to Image Retrieval, **Under Review**, *NAACL 2021.**

Ravi, H., Zhou, H., Muniz, C., Azizi, V., Ness, L., De Melo G., Kapadia, M., GitEvolve: Predicting The Evolution of GitHub Repositories, *arXiv 2020*

Ravi, H., Wang, L., Muniz, C., Sigal, L., Kapadia, M., Show Me a Story: Towards Coherent Neural Story Illustration, in *proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018.*

Sharma, S., **Ravi, H.**, Subramanyam, A. V., Emmanuel, S. *'Anti-forensics of Median Filtering and Contrast Enhancement'*, Journal of Visual Communication and Image Representation (JVCI) 2019.

Ravi, H., Subramanyam, A. V., Emmanuel, S. ACE - An Effective Anti-forensic Contrast Enhancement Technique, in *IEEE Signal Processing Letters (SPL) 2016.*

Ravi, H., Subramanyam, A. V., Emmanuel, S. Forensic Analysis of Linear and Non Linear Image Filtering using Quantization Noise, *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM) 2015.*

Ravi, H., Subramanyam, A. V., Emmanuel, S. Spatial Domain Quantization Noise Based Image Filtering Detection, in *proceedings of IEEE International Conference on Image Processing (ICIP) 2015.*

Ravi, H., Subramanyam, A. V., Gupta, G. and Avinash Kumar, B., Compression Noise Based Video Forgery Detection, in *proceedings of IEEE International Conference on Image*

*Email me for draft of these papers.

Processing (ICIP) 2014.

RESEARCH EXPERIENCE

Research Intern, Adobe Research (May 2020 –Nov 2020)
Mentor(s): Dr. Kushal Kafle, Dr. Scott Cohen, Dr. Jonathan Brandt
Summary: Developed a novel abstract creative visual storytelling dataset made of text and illustrations co-created from scratch. We propose a novel deep multimodal neural network for story comprehension on this dataset.

Graduate Assistant, Rutgers University (Jan 2018 –Dec 2019)
Mentor(s): Dr. Mubbasir Kapadia, Dr. Gerard De Melo
Summary: Led a team of 3 PhD and 4 MS students on the DARPA SOCIALSIM project on simulation of information flow within and across multiple social networks. Developed Graph representation learning and multi-task recurrent architectures for information flow prediction. Results on GitHub social network is submitted to arXiv.
Joint image-text understanding requires modeling the complex relationships. We propose a novel auxillary coherence prediction module that predicts the type of relation during training a text-to-image retrieval model. This improves the performance of retrieval significantly. Results are under review in NAACL 2021.

Research Intern, Disney Research (Jun 2017 –Sep 2017)
Mentor(s): Dr. Mubbasir Kapadia
Summary: Proposed the task of story illustration for story comprehension. Developed a hierarchical recurrent architecture optimized over sequential order embedding loss function. Results are published in CVPR 2018. Extended this work to create a novel many-to-many dataset and proposed a deep sequential retrieval architecture to model visual coherence for story illustration task. This work is to be submitted to ACL 2021.

Research Associate, IIIT-Delhi (Nov 2013 –June 2016)
Mentor(s): Dr. A.V.Subramanyam
Summary: Worked on forgery detection in images and videos based on feature extraction from noise (caused by the camera sensor or compression). Proposed novel Machine Learning models to detect anomalies caused by operations such as filtering or inpainting. Results are published in ICIP 2014, ICIP 2015, ACM TOMM 2015 and SPL 2016.

TEACHING EXPERIENCE

Teaching Assistant
Topics in AI: Data StoryTelling (Fall 2017)
Principles of Programming Languages (Spring 2017)
Probability and Statistics (Fall 2016)

PROFESSIONAL EXPERIENCE

Conference Reviewing
ACL –Reviewer (2021)
NAACL –Program Committee (2021)
EMNLP –Emergency Reviewer (2020)
ICDM –Reviewer (2020)

SKILL SET

Programming	:	Python, MATLAB, C++, C, SQL
Deep Learning Frameworks	:	PyTorch, Keras, TensorFlow
Scientific Computing Packages	:	Scikit-learn, NumPy, SciPy
Tools and Libraries	:	OpenCV, libSVM, GitHub, LaTeX, MTurk