

# Hareesh Ravi

GRADUATE STUDENT AT RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY

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

**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. AESOP: Abstract Encoding of Stories, Objects and Pictures, **Under Review**.\*

**Ravi, H.**, Vithlani, P., Modi, A., Kapadia, M., Visualize Your Story: Laying the Foundation for Coherent Many to Many Story Illustration, **Under Review**.\*

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

Chowdhary S.N., Bhowmik, R., **Ravi, H.**, Weikum, G., De Melo G., Exploiting Image-Text Synergy for Contextual Image Captioning, in *The Third Workshop Beyond Vision and LANGUAGE: inTEgrating Real-world kNowledge (LANTERN), EACL 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*.

**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 Processing (ICIP) 2014*.

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\*Email me for draft of these papers.

RESEARCH EXPERIENCE	<p><b>Research Intern, Adobe Research</b> (May 2020 –Nov 2020)  <b>Mentor(s):</b> Dr. Kushal Kafle, Dr. Scott Cohen, Dr. Jonathan Brandt  <b>Summary:</b> Created a novel abstract creative visual storytelling dataset made of text and illustrations co-created from scratch. We proposed a deep multimodal neural network that learns to model the co-evolution of visual and textual concepts to perform story completion. The work is currently under review in ICCV 2021.</p> <p><b>Graduate Assistant, Rutgers University</b> (Jan 2018 –Dec 2019)  <b>Mentor(s):</b> Dr. Mubbasir Kapadia, Dr. Gerard De Melo  <b>Summary:</b> 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.</p> <p><b>Research Intern, Disney Research</b> (Jun 2017 –Sep 2017)  <b>Mentor(s):</b> Dr. Mubbasir Kapadia  <b>Summary:</b> 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.</p> <p><b>Research Associate, IIT-Delhi</b> (Nov 2013 –June 2016)  <b>Mentor(s):</b> Dr. A.V.Subramanyam  <b>Summary:</b> 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.</p>
TEACHING EXPERIENCE	<p><b>Teaching Assistant</b></p> <p><i>Topics in AI: Data StoryTelling</i> (Fall 2017)  <i>Principles of Programming Languages</i> (Spring 2017)  <i>Probability and Statistics</i> (Fall 2016)</p>
PROFESSIONAL EXPERIENCE	<p><b>Conference Reviewing</b></p> <p><i>EMNLP – Reviewer</i> (2021)  <i>ACL – Reviewer</i> (2021)  <i>ACL DialDoc21 Workshop – Program Committee</i> (2021)  <i>NAACL – Program Committee</i> (2021)  <i>EMNLP – Emergency Reviewer</i> (2020)  <i>ICDM – Reviewer</i> (2020)</p>
SKILL SET	<p><i>Programming</i> : Python, MATLAB, C++, C, SQL  <i>Deep Learning Frameworks</i> : PyTorch, Keras, TensorFlow  <i>Scientific Computing Packages</i> : Scikit-learn, NumPy, SciPy  <i>Tools and Libraries</i> : OpenCV, libSVM, GitHub, LaTeX, MTurk</p>