

Aman Shrivastava

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website | github | linkedin

EDUCATION	M.S. Data Science , University of Virginia	2018 – 2019
	B.Tech. Mechanical Engineering , Indian Institute of Technology, Roorkee	2013 – 2017
EXPERIENCE	Research Scientist , University of Virginia, VA <i>Advisors - Dr. Sana Syed and Prof. Donald E. Brown</i>	2019 – <i>present</i>
	<ul style="list-style-type: none">Working on building learning frameworks for the understanding and assisted diagnosis of gastrointestinal diseases.	
	Analyst , Citi, India	2017 – 2018
	<ul style="list-style-type: none">Built a streamlined visualization platform with data driven insights for the Chief Country Officer.	
	Data Science Intern , Adwyze, India	Summer 2015
RESEARCH	<ul style="list-style-type: none">Developed a predictive model to optimize client advertising expenditure based on historical data. Increased the client's online advertising engagements by about 50%.	
	Self-supervised disease localization	
	<ul style="list-style-type: none">A multi-scale CNN to predict and localize diseased patterns in biopsy Whole Slide Images without annotated segmentation masks.	
	Correlating disease gene signature with imaging data	
	<ul style="list-style-type: none">A deep learning framework to identify image features associated with functional gene clusters.	
	Stain Normalization in Differentially Stained Biopsy Slides	
	<ul style="list-style-type: none">A self-attention based generative framework for unpaired domain translation for stain normalization in histopathological images.	
	Detection and Visual Understanding of Gastrointestinal Diseases , code	
SIDE PROJECTS	<ul style="list-style-type: none">A deep learning framework to classify Celiac and Environmental Enteropathy diseases using high resolution whole slide images from duodenal biopsy slides and numerical biomarkers.	
	Deep Image Colorization , code	
	<ul style="list-style-type: none">A self attention generative architecture to automatically colorize black and white images. Designed a UNet based generator with a perceptual loss function to generate more natural and vibrant images.	
	Data Driven Modelling of Composites , code	
	<ul style="list-style-type: none">A machine learning framework to aid in the meta-modelling of composites. Developed a system to hypothesize physical properties of novel composites using historic experimentation and simulation data.	
	Connect 4 AI , code , demo	
	<ul style="list-style-type: none">An AI agent based on Minimax algorithm and Monte Carlo simulations for the game of connect 4. Featured on Hacker News. Released a Google Play Store App based on the project – Rated : 4.7.	
	Deep Causal Inference on Time-Series Images	
	<ul style="list-style-type: none">Understanding and interpreting the structural causal relationships extracted from the filter values of the CNN trained on Gramian Angular Field images of time-series data.	
	Humorous Image Captioning System , code	
	<ul style="list-style-type: none">A self-attentive encoder-decoder framework to generate humorous captions for images indistinguishable from human generated memes.	
	News Sentiment Tracker , code	
	<ul style="list-style-type: none">Automatic scraping and analysis of trends in the sentiment of editorial articles on any selected topic of media discussion. Applied it to parameterize and co-relate social response with economic fluctuations during the demonetization drive by the Government of India in November 2016.	

Automated Clustering of Music, [code](#)

- An ML algorithm to automatically cluster songs onto playlists based on their intrinsic similarity in terms of music and lyrical features extracted from multiple sources.

Soccer Squad Optimization, [code](#)

- Strategic team selection by predicting the best football squad given budget, nationality (and/or club) and playing formation constraints based on self extracted FIFA dataset.

PUBLICATIONS AND PRE-PRINTS	<p>[1] Self-Attentive Adversarial Stain Normalization, link Aman Shrivastava, Will Adorno, Lubaina Ehsan, S. Asad Ali, Sean R. Moore, Beatrice Amadi, Paul Kelly, Sana Syed, Donald Brown. <i>Under-review</i></p> <p>[2] Deep Learning for Visual Recognition of Environmental Enteropathy and Celiac Disease, link Aman Shrivastava, Karan Kant, Saurav Sengupta, Sung-Jun Kang, Marium Naveed Khan, S. Asad Ali, Sean R. Moore, Beatrice Amadi, Paul Kelly, Donald Brown, Sana Syed. <i>IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), May 19th, 2019 Poster presentation</i></p> <p>[3] Artificial Intelligence Applied to Gastrointestinal Diagnostics: A Review, link Vatsal Patel, Marium N. Khan, Aman Shrivastava, Kamran Sadiq, S. Asad Ali, Sean R. Moore, Donald E. Brown, Sana Syed. <i>Journal of Pediatric Gastroenterology and Nutrition, 2019</i></p> <p>[4] Solving the Stain Dilemma: Computational Image Analyses to Address Differential Tissue Staining Color Bias in Duodenal Biopsies, link Sana Syed, Aman Shrivastava, Karan Kant, Luke Kang, Saurav Sengupta, Marium Naveed Khan, Najeeha Talat Iqbal, Kamran Sadiq, Christopher A. Moskaluk, Beatrice Amadi, Paul Kelly, Sean Moore, Donald Brown. <i>Digestive Disease Week (DDW), May 20th, 2019 Poster presentation</i></p> <p>[5] Deep Learning for Detecting Diseases in Gastrointestinal Biopsy Images, link Aman Shrivastava, Karan Kant, Saurav Sengupta, Sung-Jun Kang, Marium Naveed Khan, S. Asad Ali, Sean R. Moore, Beatrice Amadi, Paul Kelly, Donald Brown, Sana Syed. <i>Systems and Information Engineering Design Symposium, April 26th, 2019 Invited talk</i></p> <p>[6] Team strategizing using a machine learning approach, link Vignesh Rao, Aman Shrivastava <i>IEEE-International Conference on Inventive Computing and Informatics (ICICI), November 24th, 2017 Invited talk</i></p>
INTERESTS AND COMPETENCES	<p>Interests: Computer Vision, Explainable AI, Deep Learning in Healthcare</p> <p>Languages: Python, R, C++, Ruby, Julia, Javascript, \LaTeX</p> <p>Packages/Tools: PyTorch, Tensorflow, Keras, Git, AWS, GCP, MongoDB, Redis</p>
TEACHING EXPERIENCE / TALKS	<p>Python Instructor, Health Sciences Library, University of Virginia Spring 2020</p> <p>Assistant Capstone Advisor, School of Data Science, University of Virginia Fall 2019</p> <p>Invited Speaker, Applied Machine Learning Conference, Tom Tom Festival 2018</p>
EXTRA- CURRICULARS	<p>Editor-in-Chief: Geek Gazette, campus technical magazine, IIT Roorkee.</p> <p>Project Leader: Information Management Group, an exclusive campus coding society, IIT Roorkee.</p> <p>Core-member Quizzing Society, IIT Roorkee.</p>