Narendra Nath Joshi

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EXPERIENCE

IBM Research AI *(Research Engineer, AI/Machine Learning)* Mar 2018 - Feb 2020 (Cambridge, MA)
Mar 2020 - present (San Jose, CA)

- Developed models for efficient AI-assisted data labeling and labeling conflict resolution by intelligently batching data points and employing active learning
- Built a multi-class logistic regression text classifier to predict which AI conference a paper will get accepted to given the title
- Trained chatbots with Watson Assistant, developed classifiers to detect egregious (outstandingly bad) conversations and built a public demonstration to showcase conversational breakdowns and how chatbots recover from bad conversations
- Trained convolutional neural networks for MNIST digit image classification and generated adversarial images to attack the CNNs and built a public demonstration illustrating the concept of CLEVER scores and how they relate to neural network robustness
- Served as the AI subject matter expert for an exploratory science project in generative AI techniques by reviewing literature and advising on various techniques
- Mentored and worked with two interns on a deep learning project to generate text captions from labeled videos and an AI-assisted data labeling conflict resolution project respectively
- TECHNOLOGIES: Python, TensorFlow, Keras, scikit-learn, JavaScript

Disney Research *(Research Intern, Summer)* May 2017 - Aug 2017 (Pittsburgh, PA)

- Built a speech-based conversational agent for kids with responsive listening features like backchanneling (automatically saying 'uh huh' and 'hmm' during conversations)
- Worked on machine learning models for backchannel time and occurrence prediction, kids emotion level prediction and turn-taking time prediction
- Evaluated human-likeness of the agent using conversations with 40 real kids aged 7-11 and obtained satisfactory results from human annotation evaluation despite automatic speech recognition challenges with this population
- TECHNOLOGIES: Python, Bash, openSMILE, scikit-learn

Sensara Technologies *(Product Engineer)* Aug 2015 - Jul 2016 (Bangalore, India)

- Built an open, real-time semantic B2B search engine of television ads in Indian channels from Wikipedia and OMDb
- Implemented full-text and facet-supported search algorithms using information retrieval
- TECHNOLOGIES: Python, Bash, NLTK, Django, MySQL, Jinja, HTML/CSS

EDUCATION

Carnegie Mellon University, School of Computer Science Aug 2016 - Dec 2017 (Pittsburgh, PA)
Master of Science, Intelligent Information Systems
COURSES: Machine Learning, Language and Statistics, Advanced Multimodal Machine Learning, Machine Learning for Text Mining, Deep Learning, Search Engines, Lean Entrepreneurship

PES Institute of Techology, Dept. of Computer Science Sep 2011 - Jun 2015 (Bangalore, India)
Bachelor of Engineering, Computer Science

SKILLS

Programming	Python, Java, JavaScript, Matlab, C
Data Science	Keras, TensorFlow, Python scikit-learn, Stanford CoreNLP, Python NLTK, OpenCV

PROJECTS

Consistency & Variation in Kernel Neural Ranking Model *[Python, Keras, TensorFlow]* CMU

- Research project analyzing the Kernel Neural Ranking Model for search results using click log data from Sogou.com
- Created and conducted variance tests and determined latent matching patterns in the neural ranking model
- Developed improved ensemble search neural ranking models by studying word pair movements in word embeddings
- Achieved a 21% increase on NDCG@1, 14% increase on NDCG@3 and 14% increase on MRR compared to the original model

Automatic Gap-fill Multiple-choice Question Generation *[Python, NLTK, Stanford CoreNLP]* CMU

- Used Wikipedia corpus and applied unsupervised techniques and word embeddings for multiple choice question generation with three wrong but convincing options
- Created a statistical automatic evaluation technique (QQS - Question Quality Score) for multiple choice question generation
- Obtained an average QQS of 71% on data sources like Harry Potter and research papers, verified against human annotators

PUBLICATIONS AND CONFERENCES

- Fast and Automatic Visual Label Conflict Resolution. *Neural Information Processing Systems 2020 Demonstrations*
- "How can this Paper get in?" - A game to advise researchers when writing for a top AI conference. *Neural Information Processing Systems 2019 Demonstrations*
- BigBlueBot: Teaching Strategies for Human-Agent Interaction. *Neural Information Processing Systems 2018 Demonstrations*
- Consistency and Variation in Kernel Neural Ranking Model. *Int'l ACM Conference on Information Retrieval. SIGIR '18*
- Driver fatigue detection system. *Signal and Image Processing (ICSIP), IEEE International Conference on Signal and Image Processing (ICSIP). IEEE, 2016.*