Sandeep **Kumar**

(+91) 70-5412-6863 | ✉ sandepkr@iitk.ac.in | 🏠 krsandeep98.github.io | krsandeep98

Education

Indian Institute of Technology Kanpur *Jul. 2015 - Jul. 2019 (exp)*

B.S. in Mathematics and Scientific Computing (8.64/10)

Research Interests

Computer Vision, Natural Language Processing, Machine Learning

Publications

Multimodal Differential Network For Visual Question Generation

Conference paper at **EMNLP 2018** Link for paper

- Developed a method to incorporate exemplars to learn differential embeddings for generating natural questions for an image
- Obtained Multimodal embeddings by combining image and caption information which allows the model to capture relevant context
- Achieved state-of-the-art results on multiple datasets

Learning Semantic Sentence Embeddings using Pair-wise Discriminator

Conference Paper at **COLING 2018** Link for paper

- Proposed a novel method for obtaining sentence-level embeddings by solving the paraphrase generation task
- Introduced a sequential pair-wise discriminator to obtain semantic and relevant sentence embeddings
- Obtained state-of-the-art results on the task of paraphrase generation and sentiment analysis

Bayesian Techniques For Question Generation

Conference Paper at CVPR 2019 (Under Review)

- Developed a bayesian architecture to procure embeddings for cues such as place, tag and caption
- Used a bayesian fusion module to obtain joint embeddings for different cues
- Proposed a bayesian moderator module to gauge the importance of different fused embeddings

Projects

Interpretable Visual Dialog *March 2018 - Present*

Research internship at Georgia Institute of Technology with Prof. Devi Parikh

- Analysed Visual Dialog models with the help of GradCAM visualisations
- Adopted a Multi-Task learning setting with Question reconstruction as the auxiliary task for dialog

Video Completion with Deep Learning *Dec 2017 - Jan 2018*

Research internship at NVIDIA Graphics Bangalore

- Built a convolutional generative adversarial network for video generation
- Used multiple discriminators to ensure temporal and spatial consistency of videos

Mitigating Annotation Costs in legal domain *Oct 2017 - Jan 2018*

Course Project at IIT Kanpur

- Designed a novel algorithm to annotate legal documents in an information retrieval setup
- Eliminated human effort at test time without significantly affecting the performance

Honors & Awards

2015	**Among** top 5% in JEE Advanced 2015 and top 0.1% in JEE Mains 2015.
2015	**Secured** 96.4 % in Higher Secondary Examination
2014	**Scholar** Kishore Vaigyanik Protsahan Yojana (KVPY), National Talent Search Examination (NTSE)
2014	**Merit Certificate** Indian National Chemistry Olympiad, NSEJS (National Junior Science Olympiad)

Relevant Courses

Machine learning Techniques	Data Structures & Algorithms	Linear Algebra
Applied Stochastic Processes	Probability & Statistics	Time Series Analysis

Technical Skills

Languages: Python, C++, C, Lua, MATLAB, R **Tools** : LaTeX, MELD, GIT **DL Platforms** : Torch