Sandeep **Kumar**

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

Education ─────────────────────────────

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

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

Publications ─────────────────────────

Multimodal Differential Network For Visual Question Generation

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

- Developed a Context model using different contexts such as Part of Speech-Tags, Places and Exemplar Images
- Designed a Encoder network with help of CNN based Image model and Context model
- Implemented a Decoder network with the help of LSTM based language model for natural question generation

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

Experience ──────────────────────────

Interpretable Visual Dialog *March 2018 - Present*

Research internship at Georgia Institute of Technology (*This work is under review*)

- Analysed Visual Dialog models with the help of GradCAM visualisations
- Imposed additional constraints on the model to do well on multiple tasks
- Achieved comparable scores for the Quantitative metrics along with better visualisations

Video Completion with Deep Learning *Dec 2017 - Present*

Research internship at NVIDIA Graphics Bangalore (*This work is under review*)

- Built a convolutional generative adversarial network for this task
- Used multiple discriminators to ensure temporal and spatial consistency of video
- Tested our model on standard datasets like YFCC100M and YouTube-8M

Bayesian Techniques For Question Generation (Prof. Vinay P Namboodiri) *Jan 2018 - May 2018*

Undergraduate Research, (*This work is 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

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

Course Project (*This work is under review*)

- Designed a novel algorithm to annotate legal documents in an information retrieval setup
- Got rid of 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) and National Talent Search Examination (NTSE)
2014	Merit Certificate Indian National Chemistry Olympiad, NSEJS (National Junior Science Olympiad)
2013	Secured 95 % in Secondary Examination

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, TensorFlow