

ARCHIT SHARMA

SENIOR UNDERGRADUATE, IIT KANPUR

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EDUCATION

2018 Expected	Bachelor of Technology, IIT KANPUR Major: <i>Electrical Engineering</i> Minor: <i>Artificial Intelligence and Linguistic Theory</i> CPI: 9.8/10	2014	DAV Public School, Amritsar AISSCE, XII Board: 95/100 AISSE, X Board: 10/10
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ACHIEVEMENTS

- 2017 DEPARTMENTAL RANK 3 out of 140 undergraduates in Electrical Engineering, IIT Kanpur.
- 2017 Awarded SRI SINGHASAN SINGH SCHOLARSHIP for highest CPI in Electrical Engineering, IIT Kanpur.
- 2017 Awarded A* for exceptional performance in seven courses.
- 2017 Shortlisted for the prestigious RHODES SCHOLARSHIP by IIT Kanpur.
- 2017 Selected for the MITACS Globalink Research Internship.
- 2016 Awarded ACADEMIC EXCELLENCE AWARD by IIT Kanpur for the academic year 2015-16.
- 2016 Secured 63 rank in online round for ACM ICPC INDIA REGIONALS.
- 2016 Selected for TEXAS A&M-IITK SUMMER RESEARCH INTERNSHIP PROGRAM, only SOPHOMORE to accomplish this.
- 2015 Awarded ACADEMIC EXCELLENCE AWARD by IIT Kanpur for the academic year 2014-15.
- 2014 Secured ALL INDIA RANK 376 in JEE ADVANCED among 150,000 students.
- 2012 Secured FIRST POSITION in IX-X category in NASA AMES SPACE SETTLEMENT DESIGN CONTEST worldwide.
- 2010 Awarded NATIONAL TALENT SEARCH SCHOLARSHIP (NTSE) by Govt. of India.

WORK EXPERIENCE

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| MAY-AUG 2017 | RESEARCH INTERN at MONTREAL INSTITUTE OF LEARNING ALGORITHMS (MILA)
<i>Dr. Yoshua Bengio, Professor, University of Montreal</i> Github <ul style="list-style-type: none">Investigated and evaluated performance of different gradient estimators (REINFORCE/Policy Gradients, Straight Through and Gumbel-Softmax) for computational graphs with discrete latent variables in a half and half MNIST generation problem.Based on the idea of SYNTHETIC GRADIENTS, evaluated the benefits and limitations of a novel gradient estimator for discrete latent variables, with potential use in reinforcement learning and GANs for discrete data (such as language modelling) among others. |
| MAY-JUL 2016 | RESEARCH INTERN at TEXAS A&M UNIVERSITY, USA
<i>Dr. Srinivas Shakkottai, Associate Professor, ECE Department</i> <ul style="list-style-type: none">Worked on analyzing privacy of the user in DSRC enabled cars, which allows vehicle to vehicle/infrastructure communication.Broke down 229 GB BSM DATASET from Ann Arbor, Michigan in 6 hours by processing on 20 cores of IBM's Ada Cluster; reducing from expected computation time of 4 days.Successfully demonstrated the lack of privacy in Random ID Switching protocol by reconstructing car routes with 98.37% accuracy. Other driving behaviour based protocols under test. |
| MAY-JUL 2015 | ANDROID APPLICATION DEVELOPMENT INTERN
<i>Hughes Systique, Gurgaon, India</i> <ul style="list-style-type: none">Worked on GOSURAKSHEIT, an android based application for women safety. Integrated the new FACEBOOK API for quick status updates containing custom message and user location in case of emergency. |

PROJECTS

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| JAN-APR 2017 | VISUAL DIALOG
<i>Undergraduate Project under Dr. Vinay P. Namboodiri</i> Github <ul style="list-style-type: none">Implemented encoder-decoder framework based deep learning models for VISUAL DIALOG, with the aim to answer sequence of questions based on an image.Created a memory network based encoder for the input image, questions and the past conversation. The embeddings are fed into deep LSTM based decoder to generate the answers.Also implemented a late fusion encoder. The performance for both the encoders was comparable to those reported in the original paper. |
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MAR-APR 2017

GANS FOR SINGLE IMAGE DEHAZING

Course Project for Visual Recognition under Dr. Vinay P. Namboodiri

- Following the implementation of pix2pix for image-to-image translation, designed a GAN based architecture for image dehazing. This was the first work to try dehazing images in a GAN based setup. Tested the effect of reweighing L1 and Adversarial loss. Stacking of generators was also explored as a part of this project.
- Visually appealing results were obtained for 256x256 images, which were comparable to state-of-the-art techniques for dehazing images.

SEP-NOV 2016

VIDEO SUMMARIZATION

Course Project for Machine Learning under Dr. Piyush Rai | [Github](#)

- Implemented VSUMM, a *clustering based algorithm* using features extracted at frame level. Features tested upon include COLOR HISTOGRAMS and FC7 LAYER FEATURES of VGG16 architecture.
- Implemented a *deep learning model* using two opposite moving LSTM layers combined using a 1D CONVOLUTION layer.
- Implemented a custom version of VGRAPH and SIFT based algorithm.

Dec 2015

VISUAL QUESTION ANSWERING USING DEEP NEURAL NETS

under Dr. Vinay P. Namboodiri | [Github](#)

- Implemented a *deep learning model* for VQA Dataset. Used the VGG16 ARCHITECTURE to extract visual features. WORD2VEC was used to convert questions to into word vectors, which are fed into a LSTM network. The results are combined using a fully connected MLP, giving a softmax distribution over 1000 most frequent answers.

MAY 2016

TAGGED LOCATION DATA COLLECTION

Android Application developed at Texas A&M University | [Github](#)

- Minimalistic application to collect location data from users tagged with their mode of transport, developed from scratch.
- Pushes locally written files, containing location data, using FTP to remote server in a multi-threaded environment.

COURSEWORK

Visual Recognition	A	Machine Learning	A	Probabilistic Machine Learning	#
Fundamentals of Computing	A*	Data Structures and Algorithms	A	Image Processing	#
Digital Signal Processing	A	Probability and Statistics	A*	Algorithms-II	#
Introduction to Real Analysis	A	Partial Differential Equations	A		
Linear Algebra and ODE	A	Digital Electronics	A		
Principles of Communication	A	Control Systems	A*		

A* ≡ Outstanding

≡ Fall 2017

TECHNICAL SKILLS

Proficient	C++, C, Python, \LaTeX
Comfortable	JAVA, Shell (Bash), MATLAB
Tools	Theano, Git, Keras, NumPy, Scikit-Learn, Matplotlib
Operating Systems	Mac, Linux, Windows, Android

MISCELLANEOUS

SOFTWARE CORNER MANAGER, TECHKRITI'16

Handled logistics for software events in Techkriti, annual technical festival of IIT Kanpur. *Managed a team of six* for conducting events and interacting with prospective participants. Conducted an onsite *Appathon* with over 50 participants from colleges across India. Hosted the *Algorithmic Programming Contest IOPC* with over 400 teams registered across India.

COMPETITIVE PROGRAMMING

[CODECHEF LONG CHALLENGE RATING](#): 8190.89. Over 80 problems solved on [SPOJ](#).

Appeared in Amritapuri and Chennai regionals of ACM ICPC 2017 and Round 2 of Facebook Hackercup 2017

STUDENT GUIDE, COUNSELLING SERVICE

Mentored seven freshmen for their first year. Assisted in arranging a *six day orientation* for incoming freshmen.

SECRETARY, PROGRAMMING CLUB

Organized lectures, workshops and contests for over 200 freshmen.

MUSIC

Performed in *Musical extravaganza* and *Fresher's Day* as lead guitarist for Music Club.

Stood *second* in eastern music competition in Galaxy'15, cultural event of IIT Kanpur.