

Nirbhay Modhe

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| CONTACT | Fourth Year Undergraduate | email: nirbhaym@iitk.ac.in |
| INFORMATION | Dept. of Computer Science and Engineering Indian Institute of Technology Kanpur | home.iitk.ac.in/~nirbhaym Phone: +91 775 289 4584 |
| EDUCATION | IIT Kanpur , Bachelor of Technology. CPI - 9.8/10.0 | 2013-Present |
| | R. N. Podar School, Mumbai. CBSE (AISSCE) - 95.6% | 2013 |
| | Maneckji Cooper School, Mumbai. ICSE - 93.4% | 2011 |
| RESEARCH | University of Texas at Dallas , <i>Prof. Vincent Ng</i> | May '16 - Ongoing |
| EXPERIENCE | Event Coreference Resolution <ul style="list-style-type: none">Working on a recurrent neural network for event embedding learning and event coreference resolution on the KBP '15 Event-linking dataset. | |
| | IIT Kanpur , <i>Prof. Amitabha Mukerjee</i> | May '15 – August '15 |
| | Reconstructing Unique Inversions for Deep Model of Motion (report ☞) | |
| | <ul style="list-style-type: none">Extended the Convolutional Chair Generation model by Dosovitsky et. al. for reconstructing poses of a 3 DOF robotic arm.Obtained a labelled dataset of the CRS Robot Arm using 6 cameras and used the proposed CNN to learn the robot image representations. | |
| | IIT Kanpur , <i>Prof. Raghunath Tewari</i> | Dec '15 - April '16 |
| | Probabilistic Polynomial Method in Circuit Complexity (pres ☞ , report ☞) | |
| | <ul style="list-style-type: none">Studied the application of the probabilistic polynomial method by Ryan Williams in the All Pairs Shortest Path and Boolean Orthogonal Detection problem.Proposed the application of this method to solve min-plus matrix multiplication faster by using the tensor product decomposition of the two matrices. | |
| COURSE | Generative Image Modelling using DRAW | July '16 - November '16 |
| PROJECTS | <i>Recent Advances in CV</i> , <i>Prof. Gaurav Sharma</i> (code ☞ , pres ☞ , report ☞) <ul style="list-style-type: none">Analysed the generative RNN model “DRAW” by Gregor et. al. by experimenting with the parameters and design choices of the encoder-decoder framework on the MNIST and Street View House Numbers (SVHN) cropped dataset.Implemented and evaluated three new modifications to DRAW which incorporate convolutional features, supervised learning and fully convolutional networks on the MNIST dataset. | |
| | Sentence Level Grammatical Error Identification | July '16 - November '16 |
| | <i>Intro to Natural Language Processing</i> , <i>Prof. Harish Karnick</i> (report ☞) | |
| | <ul style="list-style-type: none">Worked on identifying sentence level grammatical errors (those arising from missing or incorrectly placed words) using a RNN model on the NUCLE corpus of the CoNLL-2013 shared task. Error identification was also performed on the NIPS 2015 dataset.Evaluated a RNN model which uses lexical features to either identify regions in a sentence where a grammatical error might be present, or identify exactly which error (insertion, deletion or replacement) exists in a particular region of a sentence. | |
| | Image Colorization by Patch Inference | Jan '16 - April '16 |
| | <i>Computer Vision</i> , <i>Prof. Vinay Namboodiri</i> (code ☞ , poster ☞ , report ☞) <ul style="list-style-type: none">Implemented and evaluate a novel image colorization model inspired by the idea of “Fast Direct Super-resolution by Simple Functions” by Yang et. al. The model learns to color images by training on the luminance and chrominance values of local patches.Evaluated the model on a set of scene images from the Sun Database. | |

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| | Object Tracking in Surveillance Videos <i>Machine Learning Tools, Prof. Harish Karnick</i> | Jan '16 - April '16 (pres ☑ , report ☑) |
| | <ul style="list-style-type: none"> Adapted the tracking model by Sam Hare in his paper “Structured Output and Tracking with Kernels” for use in the IIT Kanpur Surveillance Video Dataset, 2016. Performed classification of the localized objects using various classification algorithms such as Random Forest, AdaBoost with stumped decision trees and linear SVM. | |
| | Word Sense Disambiguation in Hindi <i>Artificial Intelligence, Prof. Amitabha Mukerjee</i> | March '15 - April '15 (code ☑ , poster ☑ , report ☑) |
| | Perl Compiler <i>Compiler Design, Prof. Subhajit Roy</i> | Jan '16 - April '16 (code ☑) |
| | NachOS <i>Operating Systems, Prof. Mainak Chaudhuri</i> | July '15 - Nov '15 |

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| TEACHING EXPERIENCE | Fundamentals of Computing , Tutor <i>Semester I and II, 2016-17</i> | <ul style="list-style-type: none"> Taught in weekly tutorial classes, devised and graded lab exams, supervised weekly lab sessions, for two consecutive semesters. |
| | Fundamentals of Computing , Academic Mentor, Counselling Service <i>2014-15</i> | <ul style="list-style-type: none"> Mentored academically deficient students in the course ESC101 (Fundamentals of Computing) through personal tutoring and doubt clearing sessions. |
| ACADEMIC ACCOLADES | <ul style="list-style-type: none"> Received Academic Excellence Award twice for outstanding academic performance (awarded to top 7% students in the institute) from 2013-15 Received an A* grade in 8 courses (awarded to top 1-2% students in a course) Secured All India Rank 414 (among 150,000 students) in JEE Advanced 2013 Secured All India Rank 313 (among 5,000,000 students) in JEE Mains 2013 | |
| RELEVANT COURSES | <ul style="list-style-type: none"> Recent Advances in Computer Vision Computer Vision & Image Processing Machine Learning Tools & Techniques Artificial Intelligence Programming Theory of Computation Data Structures & Algorithms Principles of Programming Languages Compiler Design Natural Language Processing Algorithms - II Probability and Statistics Operating Systems Logic in Computer Science Abstract Algebra Fundamentals of Computing Discrete Mathematics | |
| TECHNICAL SKILLS | Languages : Python, C, C++, R, BASH, Perl Software & Tools : TensorFlow, Theano, Caffe, Matlab/GNU Octave, L ^A T _E X, Git | |
| OFFICIAL POSITIONS | Group Leader , Rubik's Cube Hobby Group, IIT Kanpur <i>2015-16</i> | <ul style="list-style-type: none"> Held workshops for various puzzles such as the Rubik's Cube, 4x4x4 cube, 5x5x5 cube, 2x2x2, Pyraminx and Megaminx Coordinated all Blindfolded Rubik's Cube Solving projects done by first year students in the summer of 2015 |
| | Event Coordinator , IORC (Indian Open Rubik's Cube) <i>March '15</i> | <ul style="list-style-type: none"> Appointed judges for all events as well as invigilated over all of them Acted as a judge for timing individual solves and provided official scrambles for puzzles |
| | Student Guide at Counselling Service, IIT Kanpur <i>2014-15</i> | <ul style="list-style-type: none"> Helped 7 freshmen adjust to campus life on their arrival to campus, provided emotional support and academic guidance to them during their first year |