

Aayush Mudgal

CONTACT INFORMATION	Final Year Undergraduate, Department of Computer Science and Engineering Indian Institute of Technology Kanpur, UP 208016	+91-8953438109 http://home.iitk.ac.in/~mudgal mudgal@iitk.ac.in
RESEARCH INTERESTS	Artificial Intelligence, Computer Vision, Intelligent Tutoring Systems	
EDUCATION	Indian Institute of Technology, Kanpur 2012-2016 Bachelor of Technology, Computer Science and Engineering - Cumulative Performance Index (CPI) of 9.3/10.0 after the end of the 6th semester All India Senior School Certificate Examination , CBSE India 2011-2012 - Scored cumulative 94.8% marks in Senior Secondary School All India Secondary School Examination , CBSE India 2009-2010 - Cumulative Performance Index 9.8/10.0 in High School	
AWARDS AND ACHIEVEMENTS	- Selected to compete in ACM Student Research Competition, SIGCSE 2016 - Researcher Author, "On Optimizing Human-Machine Task Assignments", accepted at AAAI HCOMP, - Integrating crowd-sourcing system with "off-the-shelf" machine learning classifiers 2015 Winner at Microsoft Code.Fun.Do - Developed a Windows App that utilizes machine learning to improve grammar, vocabulary and pronunciation skills of user interactively [Link] 2013 - Received Academic Excellence Award for outstanding Academic performance 2012-2013 2nd Runner's Up at Manthan - a nationwide competition to come up with feasible innovative and implementable solutions to social problems faced by the country 2012-2013 - Ranked in Top 0.4% (among 0.5 million students in IIT-JEE) 2012 - Among Top 1% in the nation in the All India Senior School Certificate Examination 2011-2012 - Awarded Meritorious Student Award by Council of Scientific and Industrial Research 2010 - Awarded NTSE Scholarship based on the National Talent Search Exam 2008-2016 - Secured All India Rank 23 in the International Mathematics Olympiad (SOF) 2008 - Secured All India Rank 16 in the National Science Olympiad (SOF) 2008	
RESEARCH PROJECTS	Automatic Hint Generation with Space Path Construction May'15 - July'15 <i>Research Project under Prof. Ken Koedinger, Carnegie Mellon University, USA</i> - Improved existing hint-generation system and contributed in parallelizations of the space path construction - Devised a novel algorithm to provide syntax hints for code that do not compile and thus covering all the more number of cases which were earlier uncovered by the system - Broadened the system and made it more suitable for the planned study in the fall semester at CMU Intelligent Tutoring System for Introductory Programming Course May'14 - Present <i>Mentored by Dr. Sumit Gulwani, Microsoft Research Lab, Redmond and Prof. Amey Karkare, IIT-K</i> - Devised an efficient semi-automatic system for problem generation, along with a set of simpler problems. Developed methods for automatic test case generation and immediate intelligent feedback - The system is being implemented in the present offering of the course ESC101 (Essentials of Computing) at IIT Kanpur with a potential to impact 400+ students Low Cost Indoor Navigation System using Optical Mouse Sensor and Smart Phone Oct'14 - Present <i>Research Project under GOOGLE-IIT Pilot Program</i> - Developing low cost indoor navigation system for visually impaired people using smartphone & optical odometer - System is expected to be highly accurate; Sanctioned a grant of 0.5 million rupees by Google	

SELECTED PROJECTS	Billion Word Imputation Jan'15 - April'15 <i>Course Project : Artificial Intelligence course under Prof. Amitabha Mukerjee IIT-K</i> - Developed and trained two language modes over 4.2 GB dataset of English sentences. The models were trained to predict the missing word, in an imputed sentences which had a word randomly removed - Modified Continuous Bag of Words (CBOW) model of Googles Word2Vec to predict a word given its neighbors as the context. Combined models predicts the missing word with 45% accuracy
	Capital Bikeshare Demand Prediction Kaggle Challenge Jan'15 - April'15 <i>Course project : Statistical and AI Techniques in Data Mining course under Prof. Amit Mitra, IIT-K</i> - Formulated and employed ensemble of random forest and logarithmic gradient boosting to forecast bike rental demand with an accuracy of 88% over the test set - Compared linear models with advanced techniques like neural networks, gradient boosting, and random forests
	Slide Sorter and Merger Jan'15 - April'15 <i>Course Project : Principles of Database Systems under Prof. T.V. Prabhakar IIT-K</i> - Developed a web-based service that allows users to mix and merge slides across different presentations. The service is aimed to help course instructors and also others in designing their lecture slides - The user can search slides, which are stored uniquely without any duplicity, on the basis of keywords or phrases. Used combination of heuristics like exact search, occurrence frequency, tagger score, word2vec similarity to rank output
	Language Studio : ITS for English Language Learning May'14 - July'14 <i>Mentored by Dr. Sumit Gulwani, Microsoft Research Lab, Redmond and Prof. Amey Karkare, IIT-K</i> - Designed framework for generation of fill-in-the-blank types of problems for learning English grammar - The aim of the project is to develop a generic language system to semi-automate the process of generation of problems similar to those that are asked in examinations like GRE/GMAT
RELEVANT COURSES	Finite State Machine: Quiz and Practice Platform Aug'14 - Nov'14 <i>Course Project : Computing Laboratory under Prof. Arnab Bhattacharya IIT-Kanpur</i> - Developed an Automata Simulator System for facilitating better understanding of Finite State Machines, featuring automaton simulation, DFA minimization algorithms, NFA to DFA conversion, Regular Expression to NFA conversion, DFA to Regular Expression conversion - The tool will be implemented Theory of Computation course as a learning tool in the next semester
	AI and ML Artificial Intelligence and Programming, Statistical and AI Techniques in Data Mining, Machine Learning Techniques, Learning with Kernels, Scalable Machine Learning (edx) Machine Learning (coursera) Computer Science Data Structures and Algorithms, Advance Algorithms, Computational Biology, Theory of Computation, Networks, Computer Organization and Architecture, Operating Systems, Compiler Design, Database Management Systems, Principles of Programming Languages Mathematics Linear Algebra, Real Analysis, Complex Analysis, Mathematical Logic, Probability and Statistics, Abstract Algebra, Numerical Methods, Discrete Mathematics
TECHNICAL SKILLS	Programming Languages C, C#, JavaScript, Perl, python, , C++, JAVA, Octave, R, MATLAB Other Tools BLAST, L^AT_EX, git, MySQL, assembly programming for MIPS, x86 Platforms Windows, Linux
POSITIONS OF RESPONSIBILITY	Teaching Assistant (Intro to Programming in C) hosted on NPTEL - Responsible for preparing assignments, quizzes and facilitating doubt clearing session (40,000+ students) Student Instructor : (Fundamentals of Computing) at IIT-K Responsible for organizing weekly tutorials and problem-solving sessions for a class of over 35 students. Assisting the Faculty Instructor in designing the course content as well as the problems for labs and exams Academic Mentor Counseling Service Helped students in adapting to the environment of the Institute. Mentored academically deficient students & provided them tutoring on individual basis