

Tushant Mittal | Resume

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Education

B.Tech., Computer Science And Engineering IIT Kanpur	8.8 (Expected) 2018
Class XII, Board of Intermediate Education FIITJEE, Hyderabad	96.9 2014
Class X, Central Board of Secondary Education Bharatiya Vidya Bhavan's Public School, Hyderabad	10.0 2012

Research Interests

•Algebraic Geometry •Automata Theory •Algebraic Algorithms •Abstract Algebra

Research Experience

Algebraic Geometry: home.iitk.ac.in/~tushant/projects/grassmanians.pdf May-July 2016

- Summer Internship under **Prof. Kapil Hari Paranjape**, IISER funded by the Indian Academy of Sciences as part of the **Summer Research Fellowship Programme**
- Learned **Commutative Algebra** and explored different aspects of Algebraic Geometry such as Computational, Classical and Enumerative Algebraic Geometry
- Covered the basics of Algebraic Geometry and also learnt about **Gröbner basis**, Schläfli's Double Six.
- Found an elementary proof of the **Grassmannian** as a Projective Variety using only ideas from linear algebra and algebraic geometry which is a much more accessible proof than the traditional one which uses exterior algebra.

Projects

Machine Learning: github.com/mittaltushant/stanford-ml Jan - Apr 2015

- Semester project under the Association for Computing Activities (**ACA**), IITK
- Project goal was to learn the basics of Machine Learning and its techniques
- Implemented various popular ML algorithms like **Least Square Method**, **Logistic Regression**, **Weighted Linear Regression**, **Naive Bayes**(for e-mail spam detection) and **K-Means Clustering** (for Image Compression) in Python

Information Theory: home.iitk.ac.in/~tushant/projects/info.pdf Aug - Nov 2015

- Course project for CS201- Discrete Mathematics under **Prof. Rajat Mittal**
- Introduced to the fundamentals of Information Theory starting from the definition of entropy, prefix coding including concepts like **Kraft's Inequality**, Binary Symmetric Channels upto **Shannon's Theorems**
- Prepared a project report and gave a project presentation on the topics covered

Foosball: Aug - Nov 2015

- Course project for TA201A - Manufacturing Processes under **Prof. Anish Upadhyaya**
- Made a miniature version of the popular Foosball game table using metal sheets and manufacturing processes such as **welding**, **brazing**, **sheet metal forming**, **casting**
- Implemented folding mechanism to make the table portable and were awarded the prize of 3rd best project

Academic Achievements

SRPF 2016: Selected by the **Indian Academy of Sciences** for their coveted Summer Research Fellowship Programme - 2016 to conduct research at Indian Institute of Science Education and Research

JEE 2014: Secured All India Rank **186** in **JEE Advanced 2014** (out of 1,50,000 participants)

KVPY 2014: Selected for the Prestigious **Kishore Vaigyanik Protsahan Yojana** National Fellowship Program funded by the Department of Science and Technology, Government of India

NSEP 2014: Among top **10%** in National Standard Examination in Physics conducted by IAPT

2012: Awarded **K.M.Munshi Award** for Maths and Certificate of Commendation by Shikshan Bharti for securing CGPA 10.0 in AISSC conducted by CBSE in 2011-12

Informatics 2011: Secured State Rank **2** and International Rank **231** in **International Informatics Olympiad** (iiO) organized by Computer Literacy Foundation

Technical skills

Programming: C, Python, Octave, Bash, Verilog

Web-Dev: HTML, CSS, PHP, SQL

Tools: \LaTeX , GNUPlot, Git, SQLite

Relevant Courses

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|---|---|---|
| • Elliptic Curves and Applications [#] | • Data Structures and Algorithms [*] | • Mathematical Logic |
| • Theory of Computation [#] | • Computing Laboratory-I | • Abstract Algebra |
| • Algorithms -II [#] | • Computer Organization | • Probability and Statistics [*] |
| • Computing Laboratory - II [#] | • Fundamentals of Computing | • Calculus |
| • Operating Systems [#] | • Discrete Mathematics | • Linear Algebra and DE |

* - A* grade in these subjects. Awarded to top 1-2% students

- Ongoing Courses

Extra Curriculars

Quizzing

- An avid quizzier, I have participated and won at many intra-college quizzes and inter-school competitions.
- Selected the Contingent leader of the IITK team for Nihilanth'16 held at IIM Indore
- Was the **quizmaster** for Takneek'15 Sci-Tech Quiz
- Managed the Quiz Club, IITK's affairs as the Secretary in 2015-16 and am currently its **Co-ordinator**

Science Coffeehouse

- I also have an interest in giving/listening to science talks and won the **second prize** in the Takneek'15 SciTalk Competition.
- Chosen as the **Leader**, Science Coffeehouse, IITK a hobby group where discussions and talks are held on a wide number of scientific topics, for the current academic year 2016-17