

ANANT GUPTA

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EDUCATION **Indian Institute of Technology, Bombay, India**
Bachelors of Technology in Computer Science and Engineering
Honours in Computer Science
Minor in Management
Cumulative GPA of 9.22/10.0

Scholars Public School, Rajpura, India
Senior Secondary Education, 93.6%

Bhavan Vidyalaya School, Chandigarh, India
Matriculation, 93.1%

INTERESTS **Computer Vision**
I am interested in the application of language models in computer vision tasks for better image understanding. My current work in NLP at Google has inspired me to think about how hierarchical grammars can be defined for parsing scenes. My coursework in computer vision and medical image processing has also spurred my interest in digital image acquisition and imaging modalities.

Artificial Intelligence
The courses I have completed have also led me to be fascinated by the broad area of artificial intelligence, and its ubiquitous applications in astronomy and medicine alike. I am interested in advancing the field by developing computational models of cognition.

WORK EXPERIENCE **Software Engineer** Jul, 2016 - present
Docs Intelligence Team at Google, Bangalore
Working on developing and launching intelligent features for the suite of cloud editors.
Worked on the experimentation framework, quality evaluation and launch for the product Docs Explore.
Currently involved in multiple projects on document understanding and grammar check.

RESEARCH PROJECT **Visible Light Communication** Aug, 2015 - Apr, 2015
Undergraduate Thesis Project
Prof. Kameswari Chebrolu
Developed prototypes to encode information in video content in the form of a grid overlay and capture and decode it on smartphones, while minimizing visual obtrusion and achieving reliable data transfer for short ranges.
Compared state-of-the-art techniques in visible light communication, particularly COBRA and Hi-Light, and adapted them for our use case.
Developed and optimized algorithms for corner detection, frame synchronization and decoding.
Evaluated prototypes by varying parameters like overlay transparency, frame buffer size and grid size, achieving an average throughput of 7 kbps.

INTERNSHIPS **ServiceWorker in Adsense** May - July 2015
Team Arrow at Google, Mountain View
Nikita Beloglazov

Experimented with ServiceWorker API in Javascript and its compatibility with the tag based ads framework.

Implemented a complete infrastructure for enabling ad requests to be intercepted by service workers on the client after registration, installation and activation.

Developed logging (using IndexedDB) and reporting of fetch errors as a use case for service workers.

Visualisation of Mobile Radio Networks based on SIMONE

May - July 2014

Technische Universität Braunschweig

Prof. Thomas Kürner

Developed an ASP.NET web application in C# which uses the Google Earth plugin to display cell antennae, intensity maps generated on the server and other information pertaining to scenario instances.

Wrote a javascript library which creates auto-resizable ground overlays to simulate zoom invariant directional icons for the cell antennae.

Created a hierarchical toggler element for viewing/hiding layers of data objects fetched dynamically from the server.

ACADEMIC HONOURS AND ACHIEVEMENTS

Secured **All India Rank 7** in **IIT JEE** out of 480,000 students, **All India Rank 2** in **AIEEE** out of 1,300,000 students, and **All India Rank 1** in **ISAT** out of 80,000 students.

Among the top 1% students in India to attend the **orientation-cum-selection camps** for the **International Physics and Chemistry Olympiads**.

Offered Kishore Vaigyanik Protsahan Yojana (**KVPY**) scholarship with an **All India Rank 20**.

ACADEMIC PROJECTS

Furniture Design from Pose

Mar - Apr, 2016

Prof. Siddhartha Chaudhari | Digital geometry processing

Modeled furniture design as an optimization problem such that for a given pose of a human being, the region of contact between the body and the surface is maximized, with additional terms for smoothness and collision prevention.

Optical Sorter

Mar - Apr, 2016

Prof. Kavi Arya | Embedded systems lab

Developed an embedded system consisting of a Raspberry Pi board with mounted camera and indicative LEDs to automatically detect defective items in a manufacturing plant.

Poisson Image Editing

Mar - Apr, 2015

Prof. Ajit Rajwade | Computer vision

Used interpolation machinery based on solving Poisson equations to perform tasks in seamless cloning (concealment, insertion, feature exchange) and selection editing (texture flattening, local color changes).

Compiler for a C-Subset

Mar - Apr, 2015

Prof. Amitabha Sanyal | Implementation of programming languages

Implemented a compiler for a subset of C to generate x86 like pseudo-assembly running on an emulated machine.

Extended the Sethi-Ullman code generation algorithm for other language constructs.

PDE based Image Regularization

Oct - Nov 2014

Prof. Suyash Awate | Digital image processing

Implemented a PDE based image regularization algorithm and demonstrated applications like inpainting, JPEG block artifact removal, noise reduction and flow visualization.

Network Layer Simulation Oct - Nov, 2014
Prof. Varsha Apte | Computer networks
Created a Network Layer Simulator to assist visualization of packet forwarding in various routing algorithms.
Provided interfaces for development of higher layer protocols and demonstrated examples like Trace Route over UDP and ICMP like error messaging.
Visualized count-to-infinity and other problems in Distance Vector routing and Link State routing.

Database-backed Webmail Oct - Nov, 2014
Prof. Nandlal Sarda | Database systems
Designed a JSP based email web application that uses PostgreSQL (RDBMS).
Used ER diagrams to create normalized tables to enable efficient data representation and queries.
Created thread based reply and forward functionality.

IIT Bombay Security Analysis Oct - Nov, 2014
Prof. Bernard Menezes | Network security and cryptography
Analyzed IIT Bombays network and web applications for security flaws.
Discovered vulnerabilities like Heartbleed, Apache based Denial of Service, Man in the Middle via ARP cache poisoning, SQL Injection, Cross Site Scripting.

Mechanical Simulation of Pistol Mar - Apr, 2014
Prof. Parag Chaudhari | Software systems lab
Developed a working model of the Glock 23 pistol using the Box2D physics engine, performed timing analysis by varying the number of iterations, and profiling.

TALKS AND SEMINARS

Visible Light Communication May, 2016
Presented my work on visible light communication to the Systems and Networking Group (SynerG) at IIT Bombay.

Effects of Sponsored Data Apr, 2016
Gave a talk on the impact of sponsored data plans on end users, content providers and internet service providers by modeling the actor decisions as optimization problems and Stackelberg games.

Gödel, Escher, Bach: An Eternal Golden Braid Jan, 2015
Gave a presentation of the book Gödel, Escher, Bach: An Eternal Golden Braid by Douglas Hofstadter for an Artificial Intelligence course.

Visualization of Mobile Radio Networks based on SIMONE Jul, 2014
Presented my work on visualization of mobile radio networks to the department of Mobile Radio Systems at TU Braunschweig.

TECHNICAL SKILLS

Proficient in C, C++, Java, Javascript, SQL, MATLAB
Familiar with Python, Lisp, Prolog, basic x86 and MIPS assembly

POSITIONS HELD

Teaching Assistant, Computer Programming and Utilization July - Nov, 2016
Designed and evaluated programming assignments for a class of 150 students.
Guided students teams for their course projects, and supervised lab sessions.

RELEVANT COURSEWORK

Image Processing and Vision: Fundamentals of Digital Image Processing, Computer Vision, Algorithms for Medical Image Processing, Digital Geometry Processing

AI: Artificial Intelligence, Introduction to Machine Learning, Foundations of Intelligent and Learning Agents

REFERENCES

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Prof. Thomas Kürner
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