Suyash Agrawal

Computer Science and Engineering
Indian Institute of Technology, Delhi

suyash1212@gmail.com
cs1150262@cse.iitd.ac.in
github.com/ozym4nd145
linkedin.com/in/suyash1012

Academic Details

Year	Degree	Institute	CGPA/Percentage
2015-2019 (Current)	B.Tech in Computer Science and Engineering	Indian Institute of Technology Delhi	9.87 **Institute Rank 3**
2015	Class XII, CBSE	Vishva Bharti Public School	96.4%
2013	Class X, CBSE	Christ Jyoti Senior Secondary School	10.00

Scholastic Achievements

- Secured **All India Rank 69** in Joint Entrance Exam Advanced - 2015 among 150 Thousand candidates.
- Won **IITD Semester Merit Award** in every semester given to **top 7%** of all the students.
- Selected for **ACM-ICPC 2017** Regional Round with a rank of 155 all over India.
- Runner up in **Microsoft's Code.Fun.Do** campus wide Hackathon in 2016 and 2017.
- Ranked in **Top 0.01%** among 1.4 million candidates appearing in Joint Entrance Examination(JEE Mains-2015).
- Selected as **KVPY** Scholar in 'Kishore Vaigyanik Protsahan Yojana' by Indian Institute of Science given to top 1%.
- Became a National Talent Search Examination (**NTSE**) scholar for being in top 1000 at National level in 2013.

Major Projects

Automated Video Description Prof. Subhashis Banerjee, May-July 2017

- Built software for generating novel description of short video clips.
- Used transfer learning in encoder by employing state of art CNN (Inception V4) to encode individual video frames.
- Designed encoder decoder network architecture consisting of Multilayered LSTMs to achieve this translation.
- Experimented with Data Augmentation, Audio Features, Attention models, Loss metrics to improve performance.
- Explored its applications in areas like video surveillance and helping visually impaired.

Automated Image Captioning Prof. Subhashis Banerjee, Jan-April 2017

- Developed a software to automatically generate captions for images.
- Used a encoder decoder network similar to machine translation for generating captions.
- Used Inception V4 network to extract features from images using transfer learning
- Used Multilayered LSTM network to decode image embeddings into natural language sentence.
- Achieved baseline performance of paper Show and Tell by Vinyals et al.

Pipelined MIPS Simulator with debugger and cache simulator Prof. Kolin Paul, Mar-April 2017

- Developed a pipelined MIPS simulator supporting animation of instruction execution in multiple stages in C.
- Simulated all stages in parallel using threads (pthreads).
- Designed a trace based cache simulator and debugger for the processor with various configuration options.
- Used SVG to show current instruction in each stage and Javascript, CSS for styling.

Other Projects

Multicycle ARM Processor Prof. Anshul Kumar, Mar-April 2017

Developed a Multicycle ARM procecssor in VHDL that ran on FPGA board. Modelled memory as slave and used AHB Lite bus for connection. Implemented UART interface for memory and extended the processor with 7 segment display and interrupt controller.

Prolog Interpreter Prof. Sanjeeva Prasad, Mar-April 2017

Designed a prolog interpreter written in OCaml. It used OCaml-lex for token generation and OCaml-yacc for parsing. Backtracking and rule unification were used to implement the relational backbone of the interpreter.

Krivine and SECD Machine Prof. Sanjeeva Prasad, April - May 2017

Implemented a compiler with krivine and secd machine. A Lexical Scanner converted program to tokens followed by a Recursive Descent Parser for converting the token list to an Abstract Syntax Tree (AST). The AST was type checked and a low level code was generated which was executed by the Krivine and SECD machine. Machines also supported features like scoping,function passing,recursion.

AC Circuit Solver Prof. Kolin Paul, Feb - Mar 2017

Designed and developed a AC Circuit solver in C which generates an SVG of input circuit and gives steady state solution of circuit. It used Lex and Yacc to tokenize and parse netlist and Gaussian Elimination to solve node equations of circuit.

Relevant Courses

- **Computer Science:**
  Computer Vision*, Algorithm Design*, AI*, Networks*, Logic for CS*, Cryptography*, Programming Languages, Computer Architecture, Design Practices, Data Structures & Algorithms, Discrete Mathematics, Digital Logic
- **Mathematics and Electrical Engineering:**
  Signals & Systems, Probability & Stochastic Processes, Calculus, Linear Algebra, Intro to Electrical Engineering.
- **Online:**
  Deep Learning (Fast.ai), Intro to Machine Learning (Stanford, Coursera), Intro to Computer Science (CS50, Harvard).

**Courses currently pursuing*

Technical Skills

- **Programming Languages:** C, C++, Python, Java, JavaScript, NodeJS, VHDL, C#, Matlab.
- **Frameworks:** ExpressJS, Django, Web2Py, Bootstrap, JQuery, MongoDB, DynamoDB
- **Programming Environments:** Git, Android Studio, LaTeX, Visual Studio, Xilinx ISE Design Suite

Extra Curricular Activities

- Co-founded Development Club in IIT Delhi to spread software development culture in college.
- Technical Activity Head at Rendezvous 2017, responsible for all the technical backend of the cultural festival.
- Executive at ACES-ACM Student Chapter and Coding Club, involved in organising various events and workshops for Computer Science department at IIT Delhi.
- Developed a chatbot named CampusBot during Code.Fun.Do to fulfill the basic needs of college students.
- Won MockStock , an online trading competition , in Tryst 2017.