Suyash Agrawal

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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

- Designed Multicycle ARM processor in VHDL that ran on FPGA board.
- Used AHB Lite bus to connect Memory and Input Output interfaces.
- Implemented 7 segment interface for processor to display cycle counts and features like interrupt, reset.

Prolog Interpreter Prof. Sanjeeva Prasad, Mar-April 2017

- Developed a Prolog Interpreter in OCaml with full command line interpreter.
- Token generation and Parsing was done using OCaml-Lex and OCaml-Yacc respectively.
- Rule unification and backtracking were done in order to implement the relational backbone of the interpreter.

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

- Developed Krivine and SECD machine in OCaml.
- Invented OCaml like programming language for these machines.
- Used OCaml-lex and Ocaml-yacc for token generation and parsing.
- Programmed various features like recursion for these machines.

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.