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	9.885 **Institute Rank 2**
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.
- **Institute Rank 2**. Consistently maintaining institute rank in top 3 among 850 students during academic years 2015-2018. IIT Delhi granted scholarship for the same.
- Selected for **ACM-ICPC 2017 and 2018** Regional Round with teams competing from all over India.
- Runner up in **Microsoft's Code.Fun.Do** campus wide Hackathon in 2016, 2017 and 2018.
- 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.

Internships & Major Projects

Summer Internship Tower Research Capital, May-July 2018

- Designed a modern Web based architecture for Order Entry service.
- Created a highly available micro-service in C++ to handle low latency market orders.
- Experimented with Golang to create a robust micro-service for order management and routing.
- Used GRPC and Protobufs for network communication between micro-services.
- Created Dyanmic UI using Javascript and employed AJAX + Websockets for client-server communication.

Online Coaching Backend Bozobaka Pvt. Ltd., Jan-Aug 2018

- Single handedly created the backend service for online coaching.
- Used Loopback framework on NodeJS to create the REST APIs for the service.
- Employed MySQL and MongoDB databases to store structured and unstructured data.
- Used Redis for caching in order to make service faster and less compute intensive.

Real Time Video Augmentation Prof. Subhashis Banerjee, Oct-Nov 2017

- Transported a human from a live green screen video stream into a custom 3D environment.
- Used techniques like Chroma Keying in YCrCb space to get a matte from the green screen video.
- Unreal Engine was used to generate videos of a custom 3D environment from a moving camera.
- Light mask and blending techniques were used for the keying output to get realistic results.

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.

Other Projects

Debunking Neural Essay Scoring Prof. Mausam, Mar - May 2018

Analysed various Neural and Non Neural systems for automated essay scoring and designed various experiments to compare their qualitative performance. Using the insights gained from these experiments, proposed methods to improve the qualitative performance of neural models. The link to the report is here.

Multilingual OCR Service Independent Project, Oct - Nov 2017

Created a dockerized service for OCR of multilingual PDFs and Images. Used NodeJS and ExpressJS to create the webserver, Tesseract OCR for character recognition, Amazon S3 for remotes access of files and Amazon SES for sending notification. Whole service built as a docker container to run on a multi-node cluster.

Auto Reimbursement Bot Tower Hackathon Runner Up, Jun - Jun 2017

Designed a Slack bot for automating reimbursement process in organizations. It automatically extracted fields like amount, invoice no. from bill photos. Written in python, it used ImageMagick to process images, then Tesseract OCR for character recognition and finally a fuzzy parser with custom rules to find relevant fields.

Deployment System Dev Club, July - Aug 2018

Developed an end to end Deployment system using docker-compose and docker-machine. It used Github hooks to auto build docker images and Slack hooks to deploy these images on multiple nodes. It was written in Golang and used Ansible for multi-node deployment.

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

Implemented a compiler with Krivine and SECD machine in Ocaml. A Lex Scanner converted program to tokens which were converted to an Abstract Syntax Tree using Recursive Descent Parser. The AST was type checked and a low level code was generated, which was executed by the machines. Machines also supported features like scoping,recursion etc.

Relevant Courses

- **Computer Science:**
  NLP, Computer Vision, AI, Machine Learning, Operating Systems, Computer Networks, Parallel Computing, Theory of Computation, Algorithm Design, Logic for CS, Programming Languages, Computer Architecture, Design Practices, Data Structures & Algorithms, Discrete Mathematics, Digital Logic
- **Mathematics and Electrical:** Linear Optimization, Signals & Systems, Prob. & Stochastic Processes, Calculus, Linear Algebra.

Technical Skills

- **Programming Languages:** C, C++, Python, Java, JavaScript, NodeJS, Golang, OCaml, VHDL, C#, Matlab.
- **Frameworks:** Docker, ExpressJS, Loopback, Django, Web2Py, Bootstrap, JQuery, MongoDB, DynamoDB, Tensorflow, PyTorch, MySQL, GRPC

Extra Curricular Activities

- Co-founded **Development Club** in IIT Delhi to spread software development culture in college.
- System Administrator in **Updaters Group**, handling the system administration work of CSE Dept. IIT Delhi.
- Coordinator at **Coding Club**, responsible for organizing all competitive coding related events at IIT Delhi.
- **Technical Coordinator** at Tryst 2018, responsible for back-end of the technical festival.