Shashwat Shivam

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Computer Science and Engineering
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Academic Details

Year	Degree	Institute	CGPA/Percentage
—	B.Tech in Computer Science & Engineering	Indian Institute of Technology Delhi	9.074
2016	Class XII, CBSE	St.Joseph's Co-Ed School	96.2%
2014	Class X, CBSE	St.Joseph's Co-Ed School	10.00

Qualifying Exams

Joint Entrance Examination (JEE) Advanced Rank: 82 (GE)

Scholastic Achievements

- **IITD Semester Merit Award:** for being in the **Top 7%** among more than 800 students in the **1st and 2nd semester**.
- **NTSE:** Awarded scholarship for being in **Top 1000** in National Talent Search Examination, 2014.
- **National Standard Examinations:** Ranked in **Top 1%** in India in **Physics**, **Chemistry** and **Astronomy**.
- **KVPY:** Selected for 'Kishore Vaigyanik Protsahan Yojana' fellowship in 2015 by IISc given to **Top 1%** students.

Internships

Samsung Electronics, South Korea: Washming Machine Course **Setting Prediction** (May, 2019 - July, 2019)

- Worked on washing machine course prediction using Bigdata Framework **Apache Spark**.
- Built course recommendation system using **XGBoost** (Gradient Boosting Framework).
- Worked on data pre-processing and analysis with **Scala** and **Tableau** respectively.

BudsTrends, KidCloset: Creation of stylist console based on **Recommender Systems**. (May, 2018 - July, 2018)

- Addressed the **cold start problem** in Recommender Sys. to suggest top k fashion items annotated with rich attributes.
- Used fashion **domain expertise** including colour theory to create **system rules** for pairing garments together.
- Created stylist console to allow the combination of fashion creativity with system recommendations to give an ideal mix.

Projects

Flowchart Grounded Dialog Dataset Collection (Prof. Mausam) (September, 2019 - December, 2019)

- Created framework to **collect dataset** based on flowcharts of tech support executives to enable research on novel NLP task.
- Observed real dialogs and added nuances in **framework to create** more **natural looking conversations**.

AlphaGoZero (Prof. Parag Singla) (October, 2019 - November, 2019)

- Implemented and trained **AlphaGoZero RL based player** using the architecture description from the nature paper for a game on a smaller Go board.

Augmented Reality Application (Prof. Chetan Arora) (October, 2019)

- **Aruco marker** detection implemented using **computer vision** techniques.
- Rendered **3D models** onto Aruco markers in **realtime** feed from webcam.
- Developed various animations and an **AR ping pong game** using markers and video from webcam.

One Shot Relational Learning from Knowledge Graphs (Prof. Mausam) (March, 2019 - May, 2019)

- Tuned existing model for one shot relational learning from knowledge graphs to **improve suggestions** for **unknown relations**.

- Added **attention** mechanism to capture **higher importance neighbours** from knowledge graph and tested other heuristics.

Yinsh AI Player (Prof. Mausam) (Septmber, 2018 - November, 2018)

- Created an **AI player** in C++ in a team of 2 using the **minimax search algorithm** to compete at a Yinsh tournament.
- Used **alpha beta pruning** and search heuristics to increase the search space depth of AI player.

Multi-Cycle ARM Processor (Prof. Anshul Kumar) (January, 2018 - April, 2018)

- Implemented **sub-parts** used in a **processor** (**ALU**, **Multiplier**, **Register File**, **Shift Register** etc.) using VHDL.
- Integrated **controller**, **datapath** (made up of above sub-parts) & **memory** using **AHB Lite bus** to form **ARM Processor**.

Toy Prolog Interpreter (Prof. Sanjiva Prasad) (April, 2018)

- Implemented a simple **prolog interpreter** in **Ocaml** using **ocamllex** for lexing and **ocamlyacc** for parsing.
- Built a **sigma algebra engine** in Ocaml supporting **unifcation** and **substitution** of terms along with **backtracking**.

Engineering Drawing Software (Prof. Subhashish Banerjee) (January, 2018 - April, 2018)

- Developed a **software package** in C++ using **Qt** to work on **polyhedral solids** and their **orthographic projections**.
- Designed algorithms to **find projections** & **hidden lines** of **3D figures** & to form **3D figures using 2D projections**.

Starling Bird Flock Simulation (Prof. Subhashish Banerjee) (April, 2018 - May, 2018)

- Developed **program** in C++ (**OpenGL**) to **simulate flocking** of starling **bird flight** using relevant mathematical equations.

Digital Canteen Application (Prof. M.Balakrishnan) (May, 2017 - July, 2017)

- Created an **android application** to note **transactions** happening within the lunch club and to display all user details.
- Setup **SQL database** and **PHP API** endpoints on a VM to **sync data** (menu, user balance etc.) with Android app.

Peer to Peer File Send Application (DevClub) (May, 2017 - July, 2017)

- Worked with a team to develop a **web application** capable of sending files between browsers using **p2p WebRTC tech.**.
- Used **Socket.IO** as a **signalling server** to **exchange meta-data** between users and to select a partner to transfer data.

Courses Done

Computer Vision, Reinforcement Learning, Natural Language Processing, Artificial Intelligence, Analysis & Design of Algorithms, Computer Networks, Data Structures & Algorithms, Discrete Mathematical Structures, Probability & Stochastic Pro., Computer Architecture, Programming Languages, Design Practices.

Technical Skills

Languages: C, C++, Python, Java, JavaScript, NodeJS, VHDL, PHP, OCaml, Prolog. **Environments:** Git, Android Studio, LaTeX, Xilinx ISE Design Suite, Vivado. **Frameworks:** PyTorch, TensorFlow, Django,Bootstrap, JQuery, MongoDB, MySQL.

Extra Curricular Activities

- Received Honorable Mention at **OpenEd AI Hackathon** 2017 for creating **NER using CRF for Hindi language**.
- Ranked in **Top 3** in **Microsoft Code.fun.do online hackathon 2018** for building an **attention tracking application**.
- **Microsoft Student Partner**: August, 2017 - October, 2019

Positions of Responsibility

- Elected **Manager** at **DevClub IIT Delhi** (April 2019 - Present)
- Executive **Member** & **Developer** at **DevClub IIT Delhi** (April 2018 - Present)