Shivam Grover

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Education

Bharati Vidyapeeth's College of Engineering (GGSIPU): *8.13/10.0* New Delhi, India
Bachelor of Technology in Information Technology *Aug. 2017 – Jul. 2021*

Bharatiya Vidya Bhavan's Mehta Vidyalaya : *88.4%* New Delhi
High School and Secondary High School *Mar. 2014 – Mar. 2017*

Experience

***Aeroleads*, Software Development Engineer** (50 hrs per week) May. 2021 – Present

- Built and optimised an advanced database search page using Elastic Search for 650 Million records over 4 collections. (***Link***)
- Built an Email Verifier API (used by 180,000 customers) from scratch and deployed it on heroku reducing the third-party cost overhead by over 5000$ per month. Also optimized the email verification pipeline using a redis queue, improving overall server concurrency by 80% and eliminating timeout crashes. (***Link***)
- Built a feature-rich email campaign product with Gmail API, currently used by 10,000 paid users. (***Link***)
- Built a chrome extension for automating the collection of the contact details of 2500 LinkedIn profiles with a single click, currently being used by over 10,000 paid users. (***Link 1***) (***Link 2***)
- Revamped the UI of the whole webapp to match modern standards.

***IIIT Delhi*, Undergraduate Research Assistant** (50 hrs per week) Mar. 2020 – Dec. 2020

- Proposed and implemented a novel way to perform simultaneous realistic pose and appearance transfer in images of humans using conditional GANs. This had previously been unexplored. (***Link***)
- Our cyclic consistency based objective functions ensures that the identity of the subject is retained in the generated images

***IIT Delhi*, Undergraduate Research Assistant** (50 hrs per week) Jun. 2019– Oct. 2019

- Built and published an android application which can predict the PM2.5 (air pollutant) value around you using a single image of that place using a DL model we trained (***Link***)
- Implemented on device training to ensure no private data of our users is taken off of their devices and Federated Learning to improve the model's performance iteratively using our users' data while preserving the privacy of the users

***Drozee*, Android Developer Intern** (25 hrs per week) Sep. 2018 – Mar. 2019

- Built their android application including more than 25 activities and several functionalities (camera, audio recording, alarm, etc.) from scratch. Used Firebase for back-end

Awards

Runner's up, **Singapore India Hackathon** IIT Madras, 2019

∗ Awarded by the Prime Minister of India and the former education minister of Singapore. It is a Hackathon organised by the Singaporean and Indian Government. My team was runner's up. (***Link***)

2nd Position, **Paul Baran's Young Scholar's Celestini Prize** IIT Delhi, 2019

∗ Awarded by the ex-CTO of Motorola and Cisco, Mrs. Padmasree Warrior.The competition was organised by the Marconi Society. The poster submitted was the result of my 3 months research internship at IIT Delhi. (***Link***)

1st Position, **Software Edition of Smart India Hackathon** MHRD, 2019

∗ This was a national level hackathons, organised by AICTE and MHRD. I built an android application to aid e-vehicle charging operators in managing and maximizing their audience without compromising on the profits. (***Link***)

1st Position, **Hardware Edition of Smart India Hackathon** MHRD, 2019

∗ This was a national level hackathons, organised by AICTE and MHRD. We built a humanoid robot to help nurses do muscle intensive tasks like lifting and turningpatients by mimicking the actions of the nurse that are identified from motion sensorsembedded on the wearable vest. (***Link***)

1st Position, **e-Yantra, Robotics and CV competition** IIT Bombay, 2019

∗ It is a national level competition organised by IIT Bombay and MHRD. (***Link***)

2nd Position, **Build for India by PayTM** BVP, 2019

* Awarded by the Vice President of Paytm.

2nd Position, **ML Sprint** BVP, 2019

1st Position, **Creatathon (online hackathon)** 2019

***Winner* of Hack NIEC** NIEC, 2018

2nd Position, **HackBVP2.0** BVP, 2018

3rd Position, **IGDTU Hackathon** IGDTU, 2018

Projects

Spaced Out Sep. 2019 – Mar. 2020

* A 3D Rythm game built with Unity and C. Used fast fourier transform to sync audio with the obstacles and objects in real time. (***Link***)
* Used blender to design and edit objects and backgrounds.

3D Reconstruction from Egocentric Views Sep. 2019 – Mar. 2020

* A novel two-step approach for generating the 3D mesh and textures of the user mounted with an egocentric camera (for example, cameras under a VR headset). Uses a conditional GAN for translating the egocentric views into the third-person views and also for generating the texture maps. In terms of ability to generalize among different subjects, our system is the first of its kind. (***Link***)

Simultaneous Pose and Appearance Transfer Mar. 2020 – Dec. 2020

* From an image of an object (for example a person), we transfer its pose and appearance to a target pose and appearance in a single go using a novel approach that uses conditional GANs and cyclic consistency for unsupervised learning.
* I implemented this in python using **Keras for Tensorflow, OpenCV, Numpy**. (***Link***)

Visionair Mar. 2020 – Dec. 2020

* An android application that uses Deep Learning and Computer Vision to estimate the AQI around you accurately using a single image. Also uses Federated Learning to improve the model's performance while preserving the privacy of the users as the user base grows.
* We trained the models on python and built the application in JAVA using **Tensorflow and OpenCV**. (***Link***)

Humanoid Nurse Jul. 2019 – Aug. 2019

* A humanoid robot to help nurses do muscle intensive tasks like lifting and turning patients by mimicking the actions of the nurse that are identified from motion sensors embedded on the wearable vest.
* I also built an android app for easy maneuvering of the bot. Accompanied with an android application for remotely controlling and tracking the bot. (***Link***)
* *Winner: Smart India Hackathon 2019 Hardware Edition*

Detection of used syringes in hospitals Jul. 2019 – Present

* A deep learning model that can detect used syringes from a camera feed and send alerts. Used along with a special type of syringe we invented which enables visual identification of usage.
* Built a custom Syringe Cutter machine that logs the number of syringers properly destroyed and stores it onto the database. Also built an android application for the administrator that informs him about the number of syringes that have been dispatched and destroyed. (***Link***)
* *Awarded by the* ***Prime Minister of India****, Mr. Narendra Modi* at SgIH 2019

EasyCharge Dec. 2018 – March. 2019

* An android application to aid operators of e-vehicle charging stations in managing and maximizing their audience without compromising on the profits. Uses several parameters such as location, crowd, time and day, etc to dynamically suggest an optimal price. Used Firebase for backend. (***Link***)
* *Winner: Smart India Hackathon 2019 Software Edition*

BoardEasy - Bus alert system for aged people September. 2018 – October. 2018

* Android app that show users the realtime locations of the buses that use that bus stop
* The user can click on the bus that they want to ride and the bus driver will get an alert and this will tell him that he must stop at bus stop. Used JAVA, Firebase, and Google maps API. (***Link***)
* *Winner: HackBVP2.0*

Thirsty Crow Sep. 2018 – May. 2019

* An autonomous line following bot that uses a path following algorithm to traverse. I used graph to store build the arena within the code and using a modified version of the BFS I find the shortest path between the bot and 6 target objects that the bot visits one by one.
* Using a camera at the top of the room, detects different objects and display animated models on them using augmented reality. (***Link***)
* *Winner: e-Yantra 2018 @ IIT Bombay*

Publications

Shivam Grover, Kshitij Sidana, Vanita Jain, "Improving Generalization for Geometric Variations in Images for Efficient Deep Learning", *Multimedia Tools and Applications*, July, 2022 (submitted).

Shivam Grover, Kshitij Sidana, Vanita Jain, "Pipeline for 3D reconstruction of the human body from AR/VR headset mounted egocentric cameras", *arXiv:2111.05409 [cs.CV]*, Nov, 2021.

Vanita Jain, Qiming Wu, **Shivam Grover**, Kshitij Sidana, Gopal Chaudhary, San Hlaing Myint, Qiaozhi Hua, "Generating Bird's Eye View from Egocentric RGB Videos", *Wireless Communications and Mobile Computing*, vol. 2021.

Shivam Grover, Kshitij Sidana, Vanita Jain, "Egocentric Performance Capture: A Review", *Fusion: Practice and applications (FPA)*, Volume 2 , Issue 2, PP: 64-73 , 2020.

Technical Skills

Languages: Python, Ruby on Rails, Java, JQuery, Javascript, HTML, SQL, Vue
Softwares: Android Studio, Unity3D, Blender, Adobe Photoshop
Data Science Frameworks and Libraries: OpenCV, NumPy, Pandas, Matplotlib, Redis, Keras
Skills: Image Processing, Full Stack Development, UI/UX, Data Processing, Elastic Search, Mongo DB, AWS

Extracurricular Activites

- Volunteered as a reviewer for IEEE Access
- Conducted a series of workshops on Android Development and Computer Vision and guided more than 50 students
- Represented my college and won several competitions in the field of development, research, and design
- General Secretary of ACM BVP Mar. 2019 - Mar. 2020
- Technical head and Design head of ISTE BVP Mar. 2018 - Mar. 2019
- Core Member and Design Head of Enactus BVP 2017 - 2018
- Technical and Design Head of CSI Robotics Society 2017 - 2018

Scores

GRE

- **Total : 330/340**
- Quant : 169/170
- Verbal : 161/170

IELTS

- **Total : 8.5/9**
- Reading : 9/9
- Listening : 9/9
- Speaking : 7.5/9
- Writing : 9/9

TOEFL

- **Total : 115/120**
- Reading : 29/30
- Listening : 28/30
- Speaking : 28/30
- Writing : 30/30