

# Anshul Subramanian

ENGINEER

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## Personal Profile

Results-driven Computer Science graduate with over three years of practical experience specializing in artificial intelligence and machine learning. Proven ability to create robust and elegant solutions, coupled with a strong track record of leadership in professional settings. Adept at actively applying skills to develop innovative AI-based solutions.

## Education

### SRM Institute of Science and Technology

Bachelor in Computer Science and Engineering

- Percentage: 91.25%

NCR, India

June 2017 - May 2021

## Work Experience

### Samsung Research and Development Institute Noida

Engineer

Noida, India

Dec 2021 - Present

#### In-House Solution Development

Individual developer of a C-GAN based network to translate an image based on an input style, which will be deployed in future Samsung smartphones

- Travelled and co-worked with Samsung Headquarters for product quality and deployment process.
- Led a team of five engineers in developing a solution which can translate an image taken from a low focal length to a higher focal length by utilizing technologies such as GAN networks and multi-plane re-projection.
- Developed a solution which can convert a single image to a long exposure image using methods such as optical flow estimation.
- Developed an integrated a real-time facial recognition system on android smartphones.

#### Camera Solutions

- Played a pivotal role in integrating portrait preview and capture models within the framework layer, enabling dynamic frame blurring. Additionally, successfully addressed issues pertaining to incorrect frame dimensions and artifacts in HDR input frames.
- Innovated a cutting-edge architecture to address a challenge presented at the Mobile Development Conference, securing recognition as the top solution poised for commercial success.
- Collaborating with a team of five professionals to develop our solution and strategically positioning it for widespread commercialization on Samsung smartphones.
- Further contributed towards the Mobile Development conference by proposing novel solutions to real-world problems which was selected in the top 20 global proposals across all Samsung Research Institutes.
- Collaborated on the development of two in-house solutions, Image Style Transfer and Natural Bokeh Gradation. Enhanced segmentation network accuracy through the implementation of an innovative loss function, designed a novel attention mechanism for Natural Bokeh Gradation, and engineered a GAN architecture for image style transfer, enabling the seamless transfer of styles between images.
- Handpicked to work in Noida Artificial Intelligence Task-force (NAIT), which specializes in Generative AI.

#### Patent Task Force

- Filed patents based on image processing for in display camera sensors and converting low focal length images to a higher focal length.
- Led a team of freshers in idea formation, research and patent proposals which resulted in 3 potential patent and 4 research proposals.

#### Camera Application

- Optimized and rectified camera application issues, addressing over 70 cases, which encompassed bug fixes, performance enhancements, and frame consistency improvements.

#### Samsung Members Event

- Served as the lead presenter and demonstrator for various camera features on Samsung's flagship models, during six high-profile Samsung Members and phone launch events.

### Incedo Inc.

Gurgaon, India

Software Development Engineer

July 2021 - Nov 2021

- Engaged with international clients to gain a deep understanding of their project requirements, ensuring alignment with their specific needs and expectations.
- Utilized Python, MySQL, and batch scripting to automate critical client processes, streamlining the previously manual tasks of extracting data from the database, executing necessary data operations, and updating the client's Excel sheets on a daily basis. This automation significantly reduced the time required, from over 2 hours to less than 2 minutes.

## Patent

2022	<b>METHOD AND SYSTEM FOR PROCESSING ONE OR MORE IMAGES OF AN UNDER DISPLAY CAMERA ,</b>	202211051020
2024	<b>Method and System For Converting One Or More Images At a Low Focal Length To a Higher Focal Length,</b>	Patent Pending

## Projects

### GAN based Style Transfer

Noida, India

Samsung Reseach and Development Institute - Noida

March 2025 - June 2024

- Individual developer of a Conditional GAN network to translate an image to a particular style.
- Prepared a dataset of over 115,000 image pairs consisting of different styles.
- Integrated solution on device with an inference time of < 4 seconds.
- Solution to be deployed in future devices.
- Output visual quality resembles that to a diffusion network with a 10x larger model size on-device.

### Focal Length Translation

Noida, India

Samsung Reseach and Development Institute - Noida

June 2024 - December 2024

- Lead developer of a Conditional GAN network to edit a face based on certain parameters.
- Solution consists of a C-GAN network to handle the face translation and a convolution based network to translate the background.
- Prepared a dataset of over 14,000 images consisting of different facial edits.
- Solution visual quality metrics - LPIPS < 0.1, Perceptual Loss < 0.08, PSNR > 30. Inference time < 300 milliseconds

### Mathematical OCR using Transformers

Gurgaon, India

Self Learning Project

Dec 2022 - Jan 2023

- Developed a Python application that takes an image containing a mathematical expression as input and convert it into text format.
- Prepared a dataset of over 600 images of mathematical expressions along with their textual forms. Increased the size of the dataset to 2400 using augmentation techniques.
- Based on a vision encoder transformer, consisting of a multi-head self-attention mechanism to identify individual elements in the expression using tokenization.
- The result is presented as a tensor output, which is subsequently decoded to provide the textual representation of the mathematical expression.
- The scope of this project limits to basic mathematical expressions consisting of multiplication, division, addition, subtractions and powers and exponents.

### Weapon Detection System

NCR, India

SRM Institute of Science and Technology

Jan 2021 - May 2021

- Compared the performance of three different object detection models, which were trained on a custom dataset to detect object in real-time.
- Curated over 4000 images of weapons of 8 different classes, making the dataset. These images were labelled and split into test and train sets.
- YOLO v3, Mobilenet V2 and EfficientNet B0 networks were trained via transfer style learning and compared their performance metrics. Mobilenet V2 was chosen as the best model(14 FPS, 72.93% precision and 72.31% recall rates).
- Skills: Python, Artificial Intelligence

## Skills

<b>Technical Skills</b>	Python (NumPy, Pandas, skikit-learn, etc.), R, C/C++, SQL, SQLite, JAVA, HTML/CSS, PHP, PhpMyAdmin, Batch Scripting
<b>Other Skills</b>	Microsoft Office, Android Application Development, Research work

## Certifications

Dec 2024	<b>Certification on Applied Deep Learning for Computer Vision and Beyond</b> , IIT Ropar	No Expiration Date
Jan 2024	<b>Samsung Software Competency Test - Professional</b> , Samsung	No Expiration Date
Jun 2023	<b>Introduction to Generative AI Learning Path</b> , Google	No Expiration Date
Aug 2019	<b>Programming for Everybody (Getting Started With Python)</b> , Coursera	No Expiration Date