Aviral Agrawal

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EDUCATION

- **M.S. Computer Vision**
  Carnegie Mellon University, Pittsburgh, PA — Dec 2024
  – Fall 23 (TA) 07-300 : "Research and Innovation in Computer Science"
- **B.E. Computer Science | Minor in Finance**
  Birla Institute of Technology and Science, Pilani, India — July 2020
  – **CGPA : 9.18/10** (Graduated in **DISTINCTION Division)**
  – **Coursework** : Machine Learning, Data mining, Data Structures and Algorithms, Object Oriented Programming, Operating System, Database systems, Compiler Construction, Computer Networks

PUBLICATIONS & PATENTS

- **Development of a Machine Learning Based Model for Damage Detection, Localization and Quantification to Extend Structure Life**
  Procedia CIRP, 98, 199-204 — Link — Mar, 2021
  – The paper proposes the transformation of a physical structure's mechanical response features to visual features which are fed to a CNN network delivering upto 85% better prediction than the previous state-of-the-art
- **5 PATENTS**
  Samsung Research Institute Bangalore — Status Link — 2022-2023
  – Provisional filing complete - 202241011598, 202241011605, 202241042992, 202241072649, 202241073429 (Primary inventor in four patents)

EXPERIENCE (3+ YOE)

- **SAMSUNG RESEARCH INSTITUTE BANGALORE**
  Senior Engineer (Computer Vision) - Bengaluru, India — Jan 2021 - Jun 2023
  – Ownership of AI-based replacement of Video compression In-Loop filter achieving 10% bd-rate gain
  – Curated data using quantization range resultant artifacts based binning for model generalization
  – Innovated a novel training strategy for a better performing smaller network than a conventional more complex network. Worked on device deployment feasibility by reducing the model multiply-and-accumulation
- **ORACLE**
  DevOps Engineer - Bengaluru, India — Nov 2020 - Jan 2021
  – As part of the OCI Exascale team, created and owned a FLASK-based based web-service and deployment
  – The Flask application is used for synchronous resource management for team-based shared resources
- **AMAZON**
  Research Engineer Intern - Bengaluru, India — Jan 2020 - Jul 2020
  – Developed a Reverse Geocoding module using Named Entity Recognition, custom clustering tree, beam search, and reference data-based filtering to output an address. Model deployed in Amazon India marketplace
  – Created an Address Classifier using a multi-branch CNN architecture resulting in 6% better prediction AU-ROC than the previously used LSTM model. Model deployed in Amazon middle- east marketplace
- **SAMSUNG RESEARCH INSTITUTE BANGALORE**
  Student Trainee - Bengaluru, India — May 2019 - Jul 2019
  – Researched methods to improve digital image zoom by leveraging a multi-focal lens array system feeding a custom-Unet model to fuse input images and produce a single image with better zoom legibility
  – The solution achieved 1.5 dB Peak-Signal-to-Noise-Ratio (PSNR) improvements over the baseline method

TECHNICAL SKILLS

- PyTorch, Python, Pytest, PySpark, C, C++, Flask, AWS

AWARDS & SCHOLARSHIPS

- **Samsung Star IP Award - Star Young Innovator** : Most IPs created within 1 year of joining — Apr 2023
- **Samsung Excellence Award** : Exceptional research to market and ecosystem building activies — Feb 2022
- **Bengalathon** : Felicitated by the WEST BENGAL GOVERNMENT for winning the hackathon — Dec 2019
- **Scholarship America** : Received scholarship (thrice) for holistically meritorious students — 2019, 18, 17
- **KVPY** : GOVERNMENT OF INDIA support to further nurture students with scientific thinking — 2015