BADRINATH SINGHAL

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EDUCATION

- **Indian Institute of Technology (IIT) Guwahati** July 2014 - June 2018
  Bachelor of Technology CPI: 8.36/10
  Majored in **Electronics and Electrical Engineering**
  Minor in **Computer Science and Engineering**

PUBLICATIONS

- U. Upadhyay, **B. Singhal** and M. Singh, *"Spinal Stenosis Detection in MRI using Modular Coordinate Convolutional Attention Networks,"* 2019 International Joint Conference on Neural Networks (IJCNN), Budapest, Hungary, 2019, pp. 1-8, doi: 10.1109/IJCNN.2019.8852085.
- S. A. Huddedar, M. Kagliwal, **B. Singhal** and F. C. Rhee, *"Performance Analysis of a Novel IT2 FCM Algorithm,"* 2018 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Rio de Janeiro, 2018, pp. 1-7, doi: 10.1109/FUZZ-IEEE.2018.8491457.

WORK EXPERIENCE

Senior Machine Learning Engineer January 2023 - July 2023
Axera Tech, Tokyo, Japan

· Modified color correction module to prevent saturation and improving texture of image by using blending with image modified by asymptotic curve.
· Researching and developing methods to perform AI based denoising of images corrupted with noises from sensors. Used generative models using f-divergence based metric such as Wasserestein, KL, JS etc for denoising. Other few approaches includes dynamic local filters and Regularisation with Denoising (RED) approach in rgb as well as raw domains.
· Performing noise analysing and modelling on images in both rgb as well as in raw domain segregated according to sensors, data properties as well as different scenes (such as dark scene, low/high light, dynamic/stationary environment etc).
· Managing AI team along with setting and managing computing resources of Axera in Japan with focus on improving modules of Image Signal Processor (ISP).

Machine Learning Scientist March 2020 - December 2022
EmbodyMe, Tokyo, Japan

· Worked on 3D face reconstruction and expression transfer in real time. Deployment of models on platforms like windows and macos.
· Developed virtual background feature on Xpression Camera, which was released for all the users.
· Developed 3D character support for Xpression Camera which let's user use anime characters and copies facial movements from user to virtual characters.
· Prepared potential future directions of our product and organisation structure
· Launched paid feature and paid user rate is growing around 50% weekly.

AI Scientist Oct 2018 - August 2020
Synapsica, Bangalore, India

· Developed Synapsica Spindle *(Product demo)* which is an AI reporting assistant for MRI Spine saving upto 80% of reporting time of radiologists.
· Used computer vision and deep learning techniques to identify vertebral levels measures patency of central canal and characterises of disc herniation and nerve root compression.

· Prepared results for clinical validation of Spindle in India.
· Worked closely with radiologists in defining problem statement, reading papers and tried multiple approaches to before finalising a method.

ADDITIONAL LEARNING

- **Advanced Deep Representation Learning** 2023
  Indian Institute of Science
- **Digital Image Processing** 2023
  Indian Institute of Science
- **Linear Algebra and Optimization** 2023
  Indian Institute of Science
- **Stochastic Models and Applications** 2023
  Indian Institute of Science
- **Advanced Machine Learning** 2022
  NPTEL
- **Recommender Systems** 2022
  School of Computer Science, University College Dublin, Ireland

TECHNICAL STRENGTHS

- **Programming Languages (or Libraries):** C/C++, Python, OpenCV, Matlab, Git, Docker, LaTeX, Pytorch, Tensorflow, ONNX, CoreML, MC-Stan
- **Miscellaneous:** Simulink, ROS

ACADEMIC ACHIEVEMENTS

- Offered Merit cum Means (McM) scholarship by IIT Guwahati for 3 consecutive years till 2018.
- Joint Entrance Examination Advanced 2014: Secured position in top 1% in India among 150000 students.
- Department rank 3 at the end of freshman year at IIT Guwahati
- 5^{th} Rank in Guwahati region for AISSCE 2013.
- Among top 0.1% in India rank out of 1.5 million students in JEE Mains 2014.