Allen Patnaik

Roll No.:186102103
PhD - Signal Processing and Machine Learning
Electronics and Electrical Engineering
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Education

Degree	Institute/Board	CGPA/Percentage	Year
Ph.D.	Indian Institute of Technology, Guwahati	70 %	2018-Present
M.Tech.	VSSUT, Odisha	83 %	2016
B.Tech.	Gandhi Institute For Technology, Odisha	76.70 %	2014
HS	AHSEC Board	72 %	2010
HSLC	SEBA Board	77 %	2008

Experience

- **Silicon Institute of Technology, Sambalpur** *Aug, 2018 - Dec, 2018*
  Assistant Professor Odisha, India
  – Taught courses are digital signal processing (DSP), signal systems (SS), and analog electronic circuits (AEC) at both undergraduate and graduate levels.
  – Conducted laboratory sessions to reinforce theoretical concepts and provide hands-on experience for students in DSP and SS.

- **Indian Institute of Technology, Guwahati** *Jan, 2022 - Present*
  Teaching Assistant Assam, India
  – Assisted in the delivery of NPTEL courses on both computer vision and image processing, machine learning and deep learning, supporting both undergraduate and graduate students.
  – Conducted tutorial sessions, discussion groups and provided assistance to students to enhance their understanding of course materials.

Projects

- **Automatic Car Parking of Robotic Vehicle Using RFID** *2014*
  B.Tech Major Project
- **Error Minimization of Digital Low Pass Filter Using Whale Optimization Algorithm** *2018*
  M.Tech Project

Research Areas

–Developed and implemented deep learning models, including convolutional neural networks (CNNs), generative adversarial networks (GANs), and transformers to enhance the spatial resolution of remote sensing imagery.

–Investigated higher-dimensional data, such as multispectral and hyperspectral imagery, to improve both spatial and spectral resolution simultaneously.

–Explored the impact of various model architectures, data augmentation techniques, and preprocessing methods on the quality and efficiency of super-resolution results.

Publications

Journal Articles

–A. Patnaik, M. K. Bhuyan and K. F. MacDorman, "A Two-Branch Multiscale Residual Attention Network for Single Image Super-Resolution in Remote Sensing Imagery," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 17, pp. 6003-6013, 2024, doi:10.1109/JSTARS.2024.3371710..

–A. Patnaik, N. Chaudhary, M. K. Bhuyan, S. Alfarhood and M. Safran, "Remote Sensing Single-Image Super-Resolution Using Convolutional Block Attention Residual Network With Joint Adversarial Mechanisms," in *IEEE Access*, vol. 12, pp. 53424-53435, 2024, doi: 10.1109/ACCESS.2024.3387981..

Conference Proceedings

–A. Patnaik, N. Chaudhary and M. K. Bhuyan, "Super-Resolution via Deep Enhanced Residual Generative Network with Adversarial Attentive Mechanism," 2023 *OITS International Conference on Information Technology (OCIT), Raipur, India*, 2023, pp. 622-627, doi: 10.1109/OCIT59427.2023.10431332.

Extracurricular Activity

–As a Team member, develop a chatbot 'ALBELA' to assist first-year students of IIT Guwahati.

–Participated in Robotics competition in B.Tech.

–Hobbies: Badminton, Guitar

Certificates

–**Short-term course on Machine Learning for Signal and Image Processing Applications** Dec 2018
NIT Rourkela

–**Fundamentals of Deep Learning** Dec 2021
NVIDIA Program

–**Crash course in Deep Learning with Google TensorFlow** June 2024
Udemy course

Technical Skills

–**Programming**: Python, MATLAB
–**Technology**: Git, Latex, OpenCV, Scikit-Learn, PyTorch, Keras, TensorFlow

Key courses taken

–**Mathematics**: Linear Algebra, Basic Calculus, Probability & Random Processes
–**Course Work**: Machine Learning, Computer Vision, Biomedical signal processing, Probability and random process

Achievements

– **Gold Medal**,Intra-department badminton competition, RSF-EEE, IIT Guwahati *2022*