National Institute of Technology Rourkela

Synopsis Seminar

Seminar Title	: Development of Efficient Image Upscaling Techniques
Speaker	: Jagyanseni Panda (Rollno : 517ec8003)
Supervisor	: Prof. Sukadev Meher
Venue	: Room No.: EC-303 (Seminar Hall of EC Department) MS Teams for online people
Date and Time	: 14 Jun 2024 (11.00 AM)
Abstract	: In image communication, image upscaling has become increasingly popular because of its potential features, such as compatibility and scalability. Due to compatibility features, an image or video can be viewed on a device of any other resolution, such as a cell phone, HDTV, or UHDTV. By resizing images, the channel bandwidth requirement is reduced and congestion on the channel is avoided during image transmission. Within the available bandwidth, a sub-sampled image is sent, then up-sampled by the same factor at the receiving end to bring it back to its original size. The high resolution (HR) image can be used for various applications, such as surveillance and recognition, because it not only provides a natural appearance but also provides detailed information. For many different analyses and interpretations, it is important to improve the resolution of existing hardware for things like medical imaging, facial recognition, satellite imaging, and so on. As a result, this dissertation focuses on developing efficient algorithms to generate HR images from low resolution (LR) images. Ten distinct ways to interpolate are proposed for this goal, including seven spatial-domains, two transform-domains, and one deep learning-based method. Among the suggested algorithms, the Adaptive Edge Sharpening-Optimized Directional Anisotropic Diffusion approach is found to outperform others in terms of various performance metrics.