

Artificial Intelligence & Data Science
Semester 7
Seminar Abstract

Topic: **Generative Adversarial Networks (GANs)**

Abstract:

Generative Adversarial Networks (GANs) are a type of deep learning model that can generate new data, such as images, text, and audio, or enhance the quality of existing data. This is why they have emerged as a transformative technology in the fields of machine learning and computer vision. GANs are a relatively new technology, but they have already had a significant impact on the field of machine learning. GANs have been used to generate realistic images of human faces, translate languages, and create new forms of art and music, serving as a gateway to Generative AI. The introductory GAN has a simple architectural complexity, making it a vibrant research field for undergraduates to explore and create powerful systems. Many research efforts related to GANs are ongoing, and one noteworthy research paper that showcases the versatility of GANs is the reference paper for this seminar, titled ***"Feature Interpretation Using Generative Adversarial Networks (FIGAN): A Framework for Visualizing a CNN's Learned Features"* (January 2023)**. This paper presents a novel approach to enhancing the interpretability of Convolutional Neural Networks (CNNs) in medical imaging, specifically for Pulmonary Edema and Liver Fibrosis. FIGAN utilizes a Conditional GAN (CGAN) to synthesize images that reveal CNN's learned features, making it a functional approach to interpreting medical images. This seminar explores the fascinating world of GANs, delving into their introduction, architecture, challenges, and applications. In the introduction, an overview of GANs will be provided, highlighting their significance in generating synthetic data with remarkable realism.

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