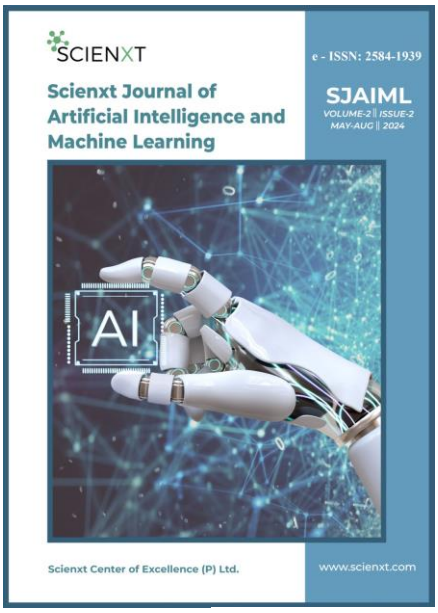

Scienxt Journal of Artificial Intelligence and Machine Learning
Volume-2 || Issue-2 || May-Aug || Year-2024 || pp. 1-17

Multimodal deep learning for pulmonary embolism prognosis prediction

Muhammed Rasin O. M[1*], Jayadev R[2], Subin A[3], Prof. Rotney Roy Meckamalil[4]

[*1]Student Department of Computer Science and Engineering, Mar Athanasius College of Engineering, Kothamangalam, Kerala

[2,3,4] Department of Computer Science and Engineering, Mar Athanasius College of Engineering, Kothamangalam, Kerala

**Corresponding Author: Muhammed Rasin O. M*
Email: rasinbinabdulla@gmail.com

Abstract:

Pulmonary embolism (PE) represents a critical medical condition characterized by the sudden obstruction of the pulmonary artery by blood clots, necessitating prompt intervention. Despite advancements in clinical methods utilizing pixel-centric deep learning models, valuable insights stored in Electronic Health Records (EHRs) often remain untapped. When applying deep learning to classify PE in computed tomography pulmonary angiography (CTPA), significant challenges emerge due to the complexity of CTPA examinations. To address this, integrating clinical and imaging data through multimodal approaches becomes imperative. Leveraging the "RadFusion Dataset," our study explores the efficacy of combining TabNet for clinical data and PENet for imaging data, aiming to surpass existing benchmarks. Advanced fusion techniques are employed to enhance prediction accuracy and interpretability. Feature importance analysis is conducted to develop a real-time prototype for clinical decision support. This project seeks to refine PE prognosis accuracy, bridging the gap between deep learning models and clinical practices, thereby advancing AI applications in medical research and consultations.

Keywords:

Pulmonary Embolism, Deep Learning, Multi- modal fusion, Clinical Decision Support