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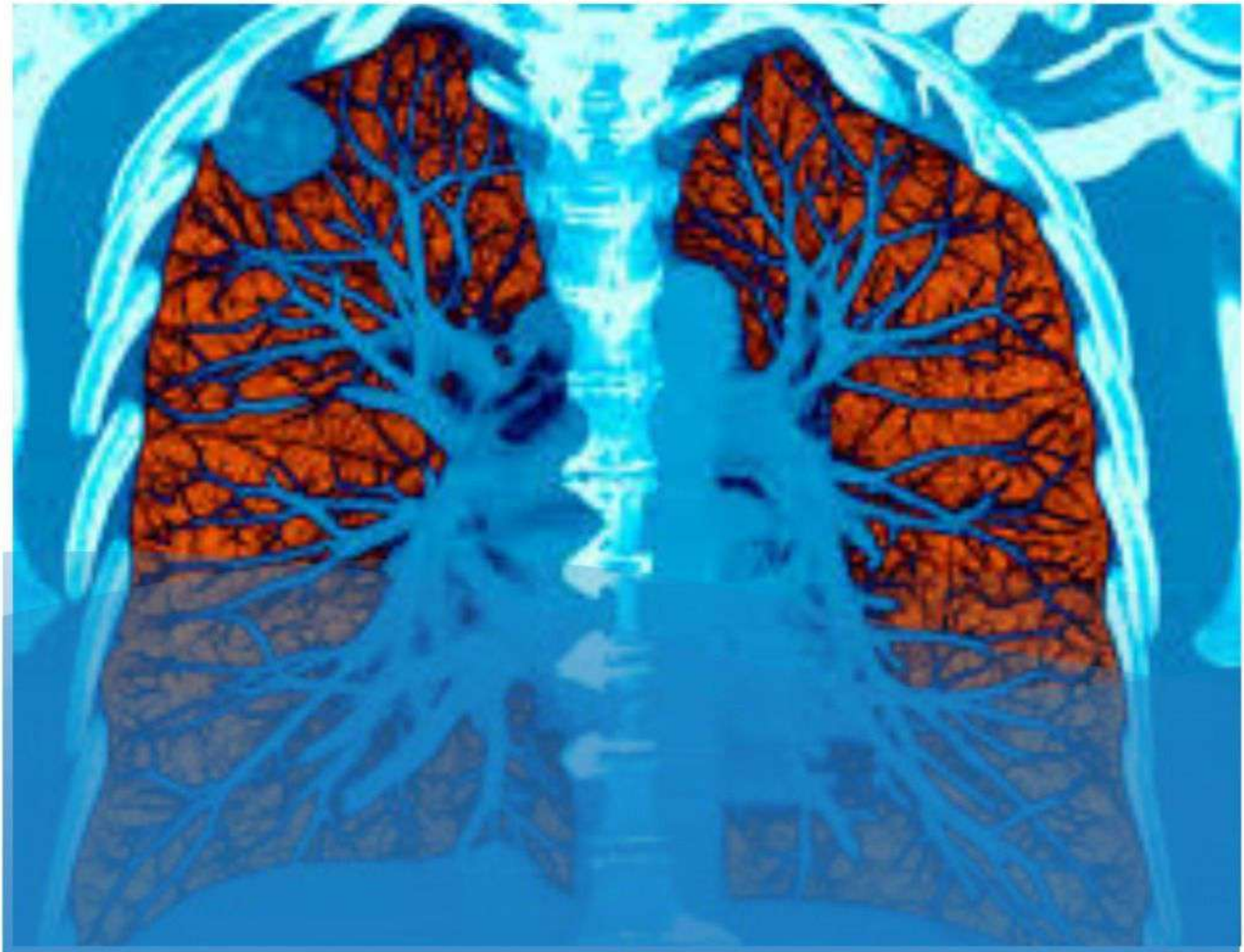
DETECTION AND CLASSIFICATION OF MALIGNANCY IN LUNG CT IMAGES USING DEEP LEARNING AND HYBRID NEURAL NETWORK TECHNIQUE



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About Author

Dr. Nuthanakanti Bhaskar currently working as Associate Professor and Head of Computer Science and Engineering Department at CMR Technical Campus, Hyderabad, India. He obtained his Ph.D. in Computer Science and Engineering from Visvesvaraya Technological University, Belagavi, India. He obtained his M. Tech. in Computer Science and Engineering from JNTU Hyderabad, India, and B. Tech. in Computer Science and Engineering from Kakatiya University, Kothagudem, India.

He has 15 years of teaching and research experience. He has published over 50 research articles in peer-reviewed national and international journals and conferences. He is a member of various national and International Professional Societies and received the "Longest Continuous SBC" award twice under CSI Academic Awards. He received Best Paper Award for EAST-2023 IEEE Conference. He received the Emerging Scholar in Teaching Excellence Award (AIMERS-2024). He received the Appreciation of IEEE Project Expo – 2021 and Best Paper Awards in twice. He reviewed journals like Journal of Integrated Science and Technology (J. Integr. Sci. Technol.), Current Medical Imaging, Journal of Experimental & Theoretical Artificial Intelligence, Malaysian Journal of Computer Science, Indonesian Journal of Electrical Engineering and Informatics (IJEEI) and IEEE, Springer Conference papers. His research interests include Computer Vision and Machine Learning, Biometrics, Image Processing, Medical Image Processing with Deep Learning and IOT. He can be contacted at

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About this Book

This book presents a complete computer-aided diagnosis (CAD) pipeline designed to assist radiologists by improving efficiency and reducing the chance of missed nodules. It focuses on four connected components: (i) CT image enhancement and preprocessing to suppress noise and standardize scans, (ii) pulmonary nodule detection and segmentation using labeled datasets, (iii) nodule classification into cancer/non-cancer and reduction of false positives using deep learning, and (iv) malignant nodule segmentation for cancer stage identification using TNM staging—specifically T-staging (T1–T4) based on tumor size. The work integrates classical image processing and modern deep learning architectures (U-Net, UNet++, 3D CNNs), and leverages benchmark datasets such as LIDC, LUNA16, and KDSB17 to build and evaluate the pipeline.

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