**Related Work**

**Pneumonia Detection**

BY

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SUBMITTED TO

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND TECHNOLOGY, BENNETT UNIVERSITY GREATER NOIDA, 201310, UTTAR PRADESH, INDIA

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Study 1: Kermany et al. (2018)

Developed a CNN model with 92.8% accuracy on a pediatric Kaggle dataset, using transfer learning with a pre-trained architecture to classify pneumonia versus normal cases.

Reference: <https://www.cell.com/cell/fulltext/S0092-8674(18)30154-5>

Study 2: Chouhan et al. (2020)

Proposed a transfer learning approach with AlexNet, achieving 96.4% accuracy on a combined Kaggle dataset, focusing on pre-trained layers for feature extraction.

Reference: <https://www.sciencedirect.com/science/article/pii/S2210832719307512>

Study 3: Islam et al. (2021)

Utilized a hybrid CNN-RNN model with 92% accuracy on a Bangladeshi Kaggle subset, emphasizing sequential feature extraction for pneumonia detection.

Reference: <https://www.frontiersin.org/articles/10.3389/frai.2021.580902/full>

Comparison and Innovation:

Unlike Kermany’s transfer learning approach, this project builds a custom CNN from scratch, avoiding reliance on pre-trained weights and tailoring it to the Kaggle dataset.

Compared to Chouhan’s AlexNet-based method, our model eschews pre-trained layers, offering originality and adaptability.

Unlike Islam’s hybrid CNN-RNN, our standalone CNN incorporates age/gender adjustments and Grad-CAM heatmaps, providing personalized and interpretable results not found in sequential models.