Abstract— **Email spam poses a significant issue in the digital era, disrupting user experiences and potentially threatening security. This study investigates the performance and effectiveness of the Convolutional Neural Network (CNN) method in detecting email spam, leveraging its ability to extract and analyze patterns from textual data. The model's performance was evaluated through confusion matrix metrics, including precision, recall, and F1-score. in addition, a webmail application was developed to integrate the CNN spam detection model, providing users with essential email functionalities. This application allows users to send, receive, and manage emails via SMTP for email transmission and IMAP/POP3 for retrieval. Developed with a front-end using HTML, CSS, and Bootstrap, and a backend in PHP and JSON, the webmail system stores all email data in an SQL database. Python was utilized to implement and train the CNN model, which automatically filters incoming emails, classifying them as either spam or non-spam before they reach the user's inbox. The results demonstrate that the CNN model achieved a high accuracy of 99.80% with the Adam Optimizer, indicating its robust capability in accurately detecting spam emails.**

Keywords—Email Spam Detection, Convolutional Neural Network, Webmail, Deep Learning.