Title: JaalTaka: A benchmark dataset for detecting counterfeit Bangladeshi banknotes

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Abstract: The rapid spread of counterfeit currency threatens global economic stability by undermining public confidence and distorting financial systems. These challenges are particularly severe in cash-dependent economies, where reduced trust in paper currency limits transactions and hinders financial inclusion. Although substantial research exists on banknote recognition and classification, studies specifically targeting counterfeit detection remain limited. The challenges and barriers associated with collecting counterfeit banknotes are a key factor behind the limited resources in this field. To bridge this gap, we present a benchmark dataset named, "JaalTaka", consisting of 1390 images of Bangladeshi banknotes, including 802 real and 588 counterfeit notes. Due to the subtle differences in security features between real and fake banknotes, six separate images of different segments were captured for each note to highlight these critical elements. Genuine banknotes were obtained from three national banks in Bangladesh, while counterfeit notes were sourced from the Rapid Action Battalion (RAB), a specialized security unit, for research purposes. To ensure robustness, the dataset includes banknotes in diverse conditions including, new, worn, user-marked and stained. This is the first publicly available dataset providing a reliable foundation for developing effective Bangladeshi counterfeit banknote detection systems. The dataset can serve as a benchmark resource for research on counterfeit banknote detection and improving financial security.

Keywords: Counterfeit banknote; Banknote authentication; Bangladeshi Banknote; Multi-view imaging; Deep learning

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