DeepPill : Web Framework for Automatic Pill Recognition and Recommendation System using Deep Learning Techniques

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Abstract: *Medication safety is a critical issue in daily patient care. In recent reports indicates that medication error is the most preventable medical error. Medication errors represent one of the most important problems in health care, with 'look-alike and sound-alike' (LASA) being the lead error. Accurately recognizing prescription pill images according to their visual appearance helps to ensure patients' safety and facilitate contemporary healthcare system for patients/ old people/blind people. Several research groups have tackled the pill identification problem, with solutions based on content-based image retrieval (CBIR) and image classification. However, accurate pill recognition in daily life is usually hindered by the few-shot learning problem. Existing solutions to prevent LASA still have their limitations. This challenge targets the development of software tools to help users accurately identify known prescription pills from pictures. In this project, we propose an automated classification system for pill images using deep learning. The deep learning algorithm of deep convolutional neural network was adopted for implementation of the proposed system. One of the key steps in building deep learning systems for pill classification and generation is the choice of featurization for the molecules. This model outperformed identification using conventional computer vision solutions, and could assist users in identifying pills or drugs while preventing medication errors. With an accuracy greater than 90%, the results of this project may be applied to the real environment, and may assist patients to identify pills or drugs and prevent medication errors caused by look-alike pills.*

Keywords: Pills Recommendation

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