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Drug Pill Recognition using Data science and Machine Learning

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ABSTRACT: Aging is a natural process typically characterized by loss of capabilities such as vision or memory. These transformations interfere with quotidian tasks performance sometimes leading to dangerous situations for senior adults. One of the most relevant is related with the wrong ingestion of medication or even forgetfulness. This kind of mistakes represents a real threat to elder's health and life. Furthermore, the existing technological solutions concerned with this problematic, are designed for professionals or general public disregarding elderly needs in particular. Thus, in order to overcome this lack of support, it will be presented an image processing tool, which represents the first steps for a larger toolset adapted for elderly persons, under construction. The procedures followed by this proposal include image acquisition and pill characterization based on its shape, dimensions and colors. The system uses these features in the learning step to describe and store pills information on local database. Later, in the recognition step, the same features are determined and compared against database in order to provide the user with relevant information related with the pill under recognition.

I. INTRODUCTION

The advancing of age also brings loss of capabilities such as vision and memory, which exposes elderly persons to dangerous situations. A common one is related with medication. Elderly persons tend to forget or fail the correct ingestion of medication which can lead to serious health damages. On the other hand, when they realize this situation, their self confidence gets weakened creating the need of a support to change this scenario. Given the situation of Europe - that will continue increasing the imbalance between taxpayers and beneficiaries every year. It is highly unavailable that this support arises from health care system. Thus, in this system, it is proposed an alternative solution based on technological trends, namely mobile devices. This solution is a subset belonging to wider tool support for elderly, under development. It applies computer vision techniques to aid elderly persons on pill identification task, aiming a reinforcement of confidence and autonomy.

II. LITERATURE SURVEY

There are different approaches had been presented by different researchers. Some of the methods have been presented in this section. To provide related functionalities (such as drug pill recognition and medication reminders) to facilitate safe medication use, many related tools have been developed and assessed.

1. D. Ushizima, A. Carneiro, M. Souza, and F. Medeiros. "Investigating pill recognition methods for a new national library of medicine image dataset" Correctly identifying pills has become a critical task in patient care and safety. Using the recently released National Library of Medicine (NLM) pill image database, this paper investigates descriptors for pill detection and characterization. We describe efforts in investigating algorithms to segment NLM pills images automatically, and extract several features to assembly pill groups with priors based on FDA recommendations for pill physical attributes. Our contributions toward pill recognition automation are three-fold: we evaluate the 1,000 most common medications in the United States, provide masks and feature matrices for the NLM reference pill images to guarantee reproducibility of results, and discuss strategies to organize data for efficient content-based image retrieval.



2. Z. Yaniv, J. Faruque, S. Howe, K. Dunn, D. Sharlip, A. Bond, P. Perillan. “The national library of medicine pill image recognition challenge: an initial report ”

In January 2016 the U.S. National Library of Medicine announced a challenge competition calling for the development and discovery of high-quality algorithms and software that rank how well consumer images of prescription pills ‘Drug-Pill Recognition using Artificial Intelligence’ match reference images of pills in its authoritative RxIMAGE collection. This challenge was motivated by the need to easily identify unknown prescription pills both by healthcare personnel and the general public. Potential benefits of this capability include confirmation of the pill in settings where the documentation and medication have been separated, such as in a disaster or emergency; and confirmation of a pill when the prescribed medication changes from brand to generic, or for any other reason the shape and color of the pill change. This is an initial promising step towards development of an NLM software system and application-programming interface facilitating pill identification.

3. R. A. Calix, R. Gupta, M. Gupta, and K. Jiang. “Deep gramulator: Improving precision in the classification of personal healthexperience tweets with deep learning ”

Health surveillance is an important task to track the happenings related to human health, and one of its areas is pharmacovigilance. Pharmacovigilancetracks and monitors safe use of pharmaceutical products. Twitter data can be used for this task given that users post their personal health related experiences on-line. One problem with Twitter data, however, is that it contains a lot of noise. Therefore, an approach is needed to remove the noise. In this paper, several machine learning algorithms including deep neural nets are used to build classifiers that can help to detect these Personal Experience Tweets (PETs). Finally, we propose a method called the Deep Gramulator that improves results. Results of the analysis are presented and discussed.

4. W.J. Chang, L.-B.Chen, C.-H.Hsu, C.-P.Lin, and T.-C. Yang. “A deep learning-based intelligent medicine recognition system for chronic patients ”

This paper proposes an intelligent medicine recognition system based on deep learning techniques, named ST-Med-Box. The proposed system can assist chronic patients in taking multiple medications correctly and avoiding in taking the wrong medications, which may cause drug interactions, and can provide other medication related functionalities such as reminders to take medications on time, medication information, and chronic patient information management. The proposed system consists of an intelligent medicine recognition Amrutvahini COE, Department of Information Technology 2020-21 4 ‘Drug-Pill Recognition using Artificial Intelligence’ device, an app running on an Android based mobile device, a deep learning training server, and a cloud-based management platform. Currently, 80 different medicines can be recognized by the proposed system.

5. M. Ervasti, M. Isomursu, and I. I. Leibar. “Touch- and audio-based medication management service concept for vision impaired older people ”

The service concept allows older users with vision impairments to manage their daily medications autonomously by providing them means to identify medicines and retrieve personal medication information. In order to demonstrate the feasibility of the concept, an early prototype called Blind NFC was implemented. It is a NFC enabled PDA with a basic functionality of reading the medicine name and dosage information aloud by touching the medicine package. Findings revealed that older users learned and used the basic functionality of touch- and audio-based system quite easily. They found potential value in the technology also in tagging and identifying other everyday physical objects than medicine packages and using their own self recorded audio messages for marking objects.

III. PROPOSED SYSTEM

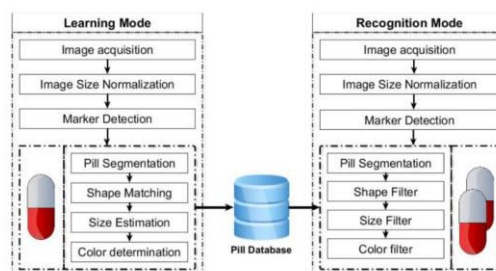


Fig: Proposed System



Currently, with the arrival of an aging society, the average age of the population is rising, human body functions are declining, and average visual acuity is also worsening year by year. According to a statistical report released by the World Health Organization (WHO) in October 2017, there are approximately 285 million visually impaired people in the world, of whom 140 million are elderly people over the age of 50; moreover, 110 million of these visually impaired elderly people suffer from multiple chronic diseases. It is known that the physiology of a person degrades with age. In the case of multiple medication usage, these 110 million vulnerable visually impaired elderly people will be more likely to take the wrong medicines or forget to take their medication.

IV. IMPLEMENTATION RESULTS

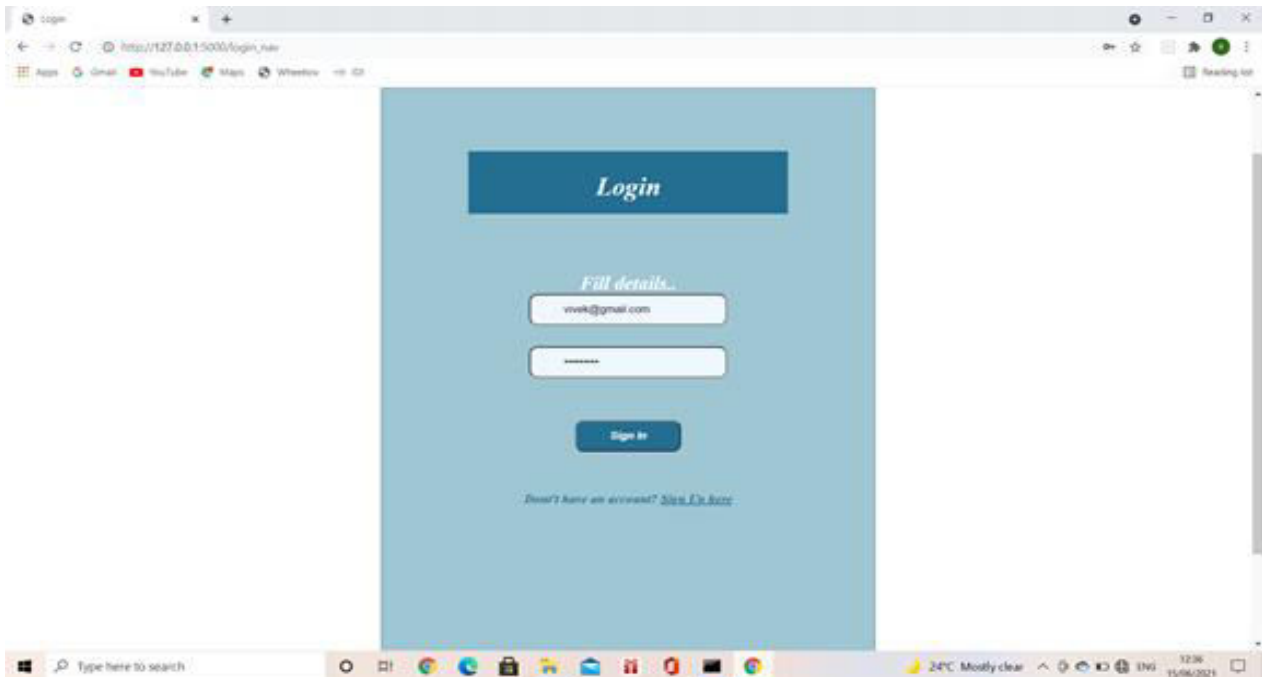


Fig: Registration Form

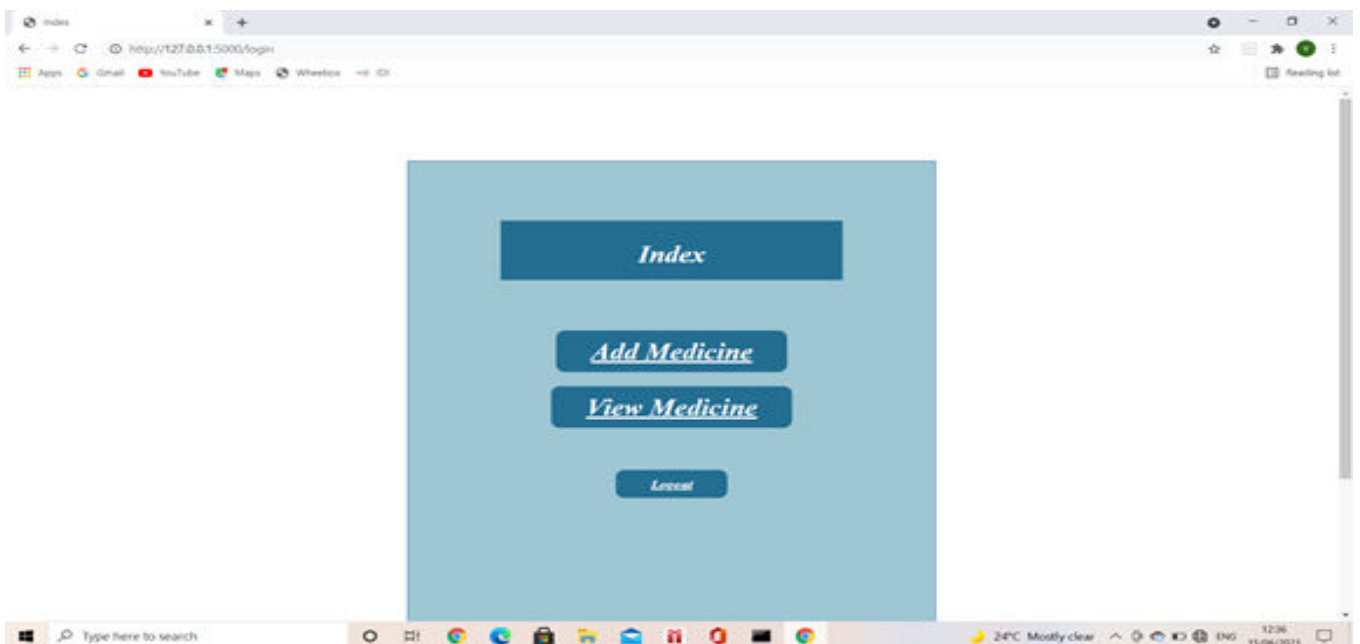


Fig: Medication Details



Fig: Capture pill Image

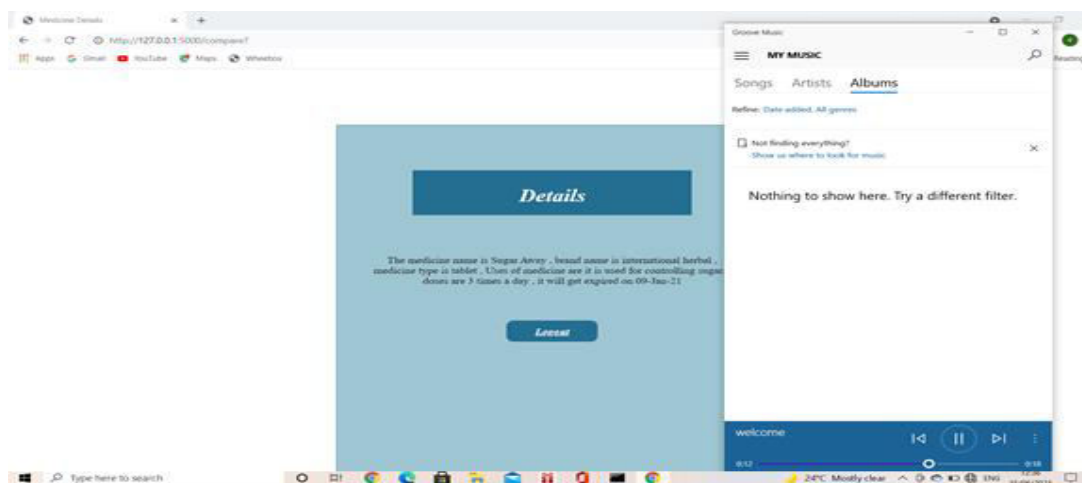


Fig: Awaring About Drug Pill

V. CONCLUSION

We have implemented drug pill recognition system using image processing, for visually impaired chronic patients. The system is designed to support safe medication use. The system use canny edge detection for masking the image and recognizing the medication. The system uploads medication information to the database to build medication-use records, allowing family members or caregivers to monitor the medication status of visually impaired chronic patients by using the mobile device app. Hence, the system can effectively mitigate the problem of drug interactions caused by taking incorrect medications, thereby reducing the cost of medical treatment and providing visually impaired chronic patients with a safe medication environment.

REFERENCES

1. World Health Organization (WHO), "Visual impairment and blindness Research," Oct. 11 2017. [Online] Available: URL:<http://www.who.int/mediacentre/factsheets/fs282/en/>.
2. W.-J. Chang, Y.-X. Yu, J.-H. Chen, Z.-Y. Zhang, S.-J. Ko, T.-H. Yang, C.-H. Hsu, L.-B. Chen, and M.-C. Chen, "A deep learning based wearable medicines recognition system for visually impaired people", in Proceedings of the 2019 IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS), 2019, pp. 207-208.
3. S. Bashyal, R. K. Subba, S. Adhikari, and L. Wagle, "Medication utilization problem among blind population in Nepal", International Journal of Pharmaceutical Sciences and Research, vol. 10, no. 4, pp. 1959-1965, Apr. 2019.
4. B. Y. Kentab, K. Z. Al-Rowiali, R. A. Al-Harbi, N. H. Al-Shammari, W. M. Balhareth, and H. F. Al-Yazeed, "Exploring medication use by blind patients in Saudi Arabia", Saudi Pharmaceutical Journal, vol. 23, no. 1, pp. 102-106, Jan. 2015.
5. Z.-H. Ling, H.-Y. Yow, M.-B. Mohd, "Medication-handling challenges among visually impaired population", Archives of Pharmacy Practice, vol. 8, no. 1, pp. 8-14, Jan. 2017.



6. K. Killick, L. Macaden, A. Smith, T. Kroll, K. Stoddart, and M. C. Watson, “A scoping review of the pharmaceutical care needs of people with sensory ‘Drug-Pill Recognition using Artificial Intelligence’ loss”, *International Journal of Pharmacy Practice*, vol. 26, no. 5, pp. 308-386, Jun. 2018.
7. N. Alhusien, K. Killick, L. Macaden, A. Smith, K. Stoddart, A. Taylor, T. Kroll, and M. Waston, “A multiple methods study on the pharmaceutical care needs of older people with sensory impairment and polypharmacy”, *Research in Social and Administrative Pharmacy*, vol. 14 no. 8, e36, 2018.



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