BUA **BOSTON UNIVERSITY ACADEMY**

Title: Analyzing the Growth of the Human Ear Against Variance in Sex, Age, and Weight to Create a Better System for Patient Identification in Developing Countries

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Abstract:

According to Professors Hurley, Nixon, and co-authors at the University of Southampton in England, the ear is a unique part of our bodies boasting an accuracy of 99.6%. This fact, joined with the widespread usage of mobile devices, presents an interesting opportunity to deal with the challenges of developing electronic medical record (EMR) systems to facilitate care in LMICs (Low- and Middle-Income Countries). And yet, the full potential of EMRs cannot be achieved unless a health care worker is able to accurately identify individual patients as they seek care. In conjunction with Project SEARCH (Scanning EARs for Child Health), we propose an innovative solution to address this issue by connecting digital health records with cartilage growth analysis in the ear by means of a machine learning algorithm. We analyzed the cartilage growth against different variables such as weight, sex, and age. Through this work, the SEARCH platform has been tested and validated against distinct datasets, including a group of Zambian infants (aged 6 days – 9 months). The results from these experiments have yielded high patient recognition rates, and thus suggest that the SEARCH platform is a viable solution for patient identification and could be used to facilitate care in developing countries.