

AbstractID: 7263 Title: Designing a Patient Identification System Using Bioinformatics – A Fingerprint Approach

Purpose: We developed a computerized patient identification system employing fingerprint scanners and pattern recognition software to reduce identification errors in radiation therapy. Our customized system was developed to interact with the IMPAC record and verification system.

Methods and Materials: The patient identification system was programmed with C++ language and equipped with an optical fingerprint scanner SDK (Suprema Inc®) to accept a scan, recognize the patient, and open the correct patient record in the record and verify system. A new patient initially has two fingers scanned (about 1 second each) and is photographed with web camera. During actual use, the patient has one finger scanned, the print is identified, (about 1 sec / 1000 records to search), a second finger is scanned for a second verification, and then the patient photograph is displayed. The error probability is one out of 1 billion. Once a patient is identified, our system calls IMPAC and opens the patient's file. We recruited 10 volunteers to create 50 virtual patients using 5 pairs of fingerprints per volunteer. This yields a database with 100 fingerprints for accuracy testing. Since the relative size of fingers on a hand varies, pairs of corresponding digits (e.g. right and left index fingers) from each volunteer were used as a virtual patient. This provided a test of scanning viability between digits (e.g. thumb vs. pinkie). A total of 115 tests were performed, each pair of fingers were tested 23 times.

Results: We had no false positive results for identifying patients out of 111 accepted scans. The smallest finger failed to scan four times and was judged inadequate for identification.

Conclusion: Optically scanned fingerprints can be used to accurately identify patients and open their IMPAC patient file. This system has great promise to ensure proper patient identification with minimal costs and effort.