



## Vortragsankündigung:

Am Mittwoch, 16.07.2008 findet um 17:00 Uhr im Wolfgang-Eychmüller-Hörsaal H 45.2 der Universität Ulm (Bereich Uni West) im Rahmen des Elektrotechnischen Kolloquiums folgender Vortrag statt:

### **Gamal Fahmy, Ph.D.**

Digital Systems for Video Technology  
Faculty of Information and Engineering Technology - The German University in Cairo

## **Automatic Dental Identification**

This talk addresses the problem of developing an automated system for postmortem identification using dental records (images). The Automated Dental Identification System (ADIS) can be used by law enforcement agencies to locate missing persons using databases of dental x-rays. Currently, this search and identification process is carried out manually, which makes it very time consuming and unreliable. In this talk, we propose architecture for ADIS. We define the functionality of its components, and we briefly describe some of the techniques used in realizing these components.

### **Introduction**

Law enforcement agencies have been exploiting biometric identifiers for decades as key tools in forensic identification. With the evolution in information technology, and the huge volume of cases that need to be investigated by forensic specialists, automation of forensic identification became inevitable. Forensic identification may take place prior to death and is referred to as *Antemortem* (AM) identification. Identification may as well be carried out after death and is called *Postmortem* (PM) identification. While *behavioral* characteristics (e.g. speech) are not suitable for PM identification, most of the *physiological* characteristics are not appropriate for PM identification as well, especially under severe circumstances encountered in mass disasters (e.g. airplane crashes) or when identification is being attempted more than a couple of weeks postmortem. Therefore, a postmortem biometric identifier has to survive such severe conditions and resist early decay that affects body tissues. Dental features are considered the best candidates for PM identification. This is due to their survivability and diversity. Traditionally, Dental identification relied on the morphology of dental restorations (fillings, crowns, .. etc.) to identify victims. However, modern materials used in restorations and fillings have poor radiographic characteristics. In addition to the fact that it may not exist in a PM record, or even melt down in mass death circumstances. With the evolution of state of the art techniques in pattern recognition and image processing, it is becoming important to make identification decisions based on inherent dental features like root and crown morphologies, teeth size, rotations, spacing between teeth, sinus patterns and other features that could be extracted from dental images.

The Federal Bureau of Investigations in the United States includes in its strategic plan the creation of an Automated Dental Identification System (ADIS), with similar goals and objectives to its Automated Fingerprint Identification System (AFIS) but using dental/teeth characteristics (images) instead of fingerprints.

The ADIS will provide automated search and matching capabilities for digitized x-ray and photographic images.

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Zu diesem Vortrag laden wir herzlich ein und bitten um Bekanntgabe in Ihrem Bereich.

Ulm, den 30. Mai 2008

Prof. Dr.-Ing. Klaus Dietmayer

- Prodekan -