

Biometrics:

Applying an Emerging Technology

By Allan Turner

Although sometimes neglected by politicians, the public and the media, jails are an important part of our nation's correctional system. Jails are the most common type of confinement used in the United States and they perform multiple functions — detaining individuals waiting to appear before court, holding sentenced offenders awaiting transfers to prison and holding those serving sentences of one year or less.

Jails, more than any other component of the correctional system, must work directly with a wide range of societal problems because they have such a diverse population. A typical jail may include adults and juveniles; males and females; and individuals who are violent, nonviolent, mentally ill, drug- or alcohol-dependent, or homeless. Offenses can range from driving under the influence to homicide. An example of the special demands placed on jails recently was highlighted in a *Washington Post* article that focused national attention on jails increasingly becoming the main psychiatric facilities for offenders with mental illnesses. To complicate matters, jails must function while also facing crowding, staffing shortages and limited funding.

Jails' Special Needs

To meet these special challenges, the National Institute of Justice's (NIJ's) Office of Science and Technology (OST) has implemented a correctional technology program that stresses the needs of jails and prisons. The program sets forth stringent criteria for technology identified for development and application. First, the technology must meet a clearly defined need. Second, it must be affordable, reliable and easy to install and maintain.

Access control is an obvious need. Jails are characterized by rapid population turnovers and the need to provide frequent access to a variety of official and nonofficial visitors. This makes identifying people entering and leaving the facility a major security concern. Jail managers face many challenges,

including accounting for staff and visitors in the case of emergencies, the ability to screen and identify visitors, and the control of inmate movement.

Application of Biometrics

One technology area that rapidly is emerging in the private sector and has tremendous potential for application in jail and prison environments is biometrics. Biometrics comprises automated methods of recognizing a person based on physiological or behavioral characteristics. Biometric technology includes fingerprint and facial recognition, retina and iris scan, hand/finger geometry and voice recognition. Biometric recognition can be used in the identification mode or the verification mode. In the identification mode, the system identifies a person from the entire population by searching a database for a match. In the verification mode, the biometric system authenticates a person's claimed identity from his or her previously enrolled pattern.

Research and Demonstration

In order to assess the potential for application of biometric technology in corrections, OST has committed resources to biometric demonstration projects in two areas during fiscal year 2000 — facial recognition technology to identify staff and visitors, and the development and demonstration of a smart card with a biometric key as a tool for inmate management. Smart card technology combines computer chips with photo identification cards. The processor and memory chip are embedded in the card and have the capacity for off-line storage as well as encryption.

Facial Recognition

NIJ is funding several development efforts to detect faces in live or taped video, or Web pages and optimize the facial image and compare it to large image databases. One project will apply

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these technologies to access control, controlled surveillance and Web searches for missing or exploited children. The Defense Advance Research Projects Agency (DARPA) recently has initiated a HumanID program with the goal of developing and demonstrating advanced surveillance methods that automatically detect, recognize and identify individuals from a distance and alert operators to any potential security concerns.

NIJ also has committed funds to a joint effort with the Department of Defense's (DOD's) Counterdrug Technology Development Program Office to define a facial recognition program plan that will have immediate benefits for corrections. The design of this program will coincide with the release of the results from the Facial Recognition Vendor Test 2000 in September. Facial Recognition Vendor Test 2000 is sponsored by NIJ, the DOD Counterdrug Technology Development Program Office and DARPA. The test will consist of an in-depth evaluation of commercially available facial recognition technologies. A two-step evaluation, including a recognition performance test and a product usability test, will be conducted. Based on the results, one or two facial recognition systems will be installed and demonstrated in a jail facility. It is anticipated that the facial recognition system demonstration initially will address the identification of jail employees and inmate visitors.

Inmate Management

The Biometrics and Inmate Management Demonstration Project will identify or develop biometric technology to enhance the control of inmate movement and accountability within a correctional facility. Issues being explored are the types of biometric devices that are appropriate to the correctional environment and how they will affect facility operations. The project aims to establish a prototype inmate control and accountability system that will utilize smart card or other technology combined with a biometric key as the

physical authentication mechanism to positively identify inmates. This allows for the development of a system to accurately monitor and track inmates. It will allow administrators to automate scheduling and identify potential incidents by alerting staff to inmate whereabouts. The project will be a cooperative effort between OST and the U.S. Navy and will be developed by the Space and Naval Warfare Systems Center in Charleston, S.C. The Naval Correctional Facility in Charleston will be used as the demonstration site.

Conclusion

Biometrics is a rapidly emerging technology area that is widely perceived as a tool that can enhance the security of correctional facilities. The projects initiated by OST will identify emerging technologies that are affordable, reliable and easy to use and maintain, and demonstrate the capabilities of selected biometric technologies that can potentially meet the specialized needs of jails.

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The Law Enforcement and Corrections Technology Center

At its 1999 annual meeting, the Law Enforcement and Corrections Advisory Council (LECTAC) subcommittees on custody, contraband detection and information systems heard presentations on and discussed biometrics and facial recognition technologies. The Law Enforcement Operations Subcommittee included the development of real-time facial recognition programs in their recommendations for research at OST.

LECTAC is an advisory organization to the National Law Enforcement and Corrections Technology Center system. LECTAC was created to identify law enforcement and corrections equipment and technology needs, and to recommend program priorities. Council members of LECTAC represent federal, state and local criminal justice agencies; labor organizations; and national and international law enforcement; and correctional and criminal justice organizations. They are appointed based on their distinguished service records. ♦

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Allan Turner, Ph.D., is a professor at George Mason University in Fairfax, Va., and currently is a visiting scientist at NIJ. He is retired from the Federal Bureau of Prisons, where he held a variety of positions, including jail administrator and warden.