

Visual Biometrics: Past Successes, Future Challenges

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Globalization, the end of the Cold war and growing affordability of travel have greatly increased the need to establish and verify the identity of travelers by means less dependent on traditional paper documents, whose trustworthiness can be easily compromised. The events of September 11 and ensuing war on terror further broadened the scope to include homeland facility and community protection as well as the needs of our military to track and verify the identity of people in countries with no identification documents. In the light of it, it should not come as a surprise that in the last decade both the federal government and private industry have made substantial investments in developing new methods and technologies for identity management. In addition to classical fingerprints, new approaches exploiting the visual appearance of various parts of human body believed to be unique to each person, most notably of the face and iris, have been developed, successfully demonstrated or even actually deployed in the field.

For years, Honeywell Advanced Technology Labs have been pursuing the visual biometrics research. We have built a progression of systems for standoff combined face and iris recognition, developed advanced algorithms for iris recognition, automated visual analytics of surveillance camera data and explored the use of social behavior for identification and intent assessment. Further progress in these areas is focusing on enabling the systems to operate at ever larger distances, under unfavorable light conditions and for fast moving subjects. As those challenges cannot be solved by software alone unless there is a significant improvement in image data acquisition systems, more funding is being directed into computational optics and new sensor development.

The talk will review the state of the art and outline the challenges and research opportunities in the field.

About the author:



Dr. Jelinek joined Honeywell in 1985. In 1990 he won the W.H. Sweatt Award, Honeywell's highest recognition of technical achievement, for his pioneering work on model based controls. Shortly afterwards he was named Honeywell Fellow and in 1995 promoted to become Senior Fellow. Over the years, he was the principal investigator or a major technical contributor on a number of large R&D projects for the federal government. For DARPA, he investigated the use of control and game theoretic concepts to improve the stability and agility of combat operations, and designed command and control solutions for teams of unmanned aircraft. More recently, he has been working on IARPA funded projects to develop long range iris recognition systems, where his interests primarily are in iris image data acquisition and sensor design. In the 1990's he also was heavily involved in expanding Honeywell's operations in the Central and Eastern Europe.