

## Afterword to the Second Edition

My first encounter with iris recognition was in the very early 1990s when the Vice President of Technology for my employer—a large technology firm—tasked me to review a paper by one John Daugman, asking “Can this technology be successful?” Neither Dr. Daugman nor iris recognition was familiar to me. The Daugman paper made great claims of accuracy for the method based on a presumed binomial model for the score distributions, with model parameters estimated from only limited data. Further, the method used phase information extracted from localized filters, an old idea which had been much discussed in other areas of automated human recognition but never applied effectively. So my answer to the Vice President’s question about the potential for iris recognition success was simply, “I don’t know”.

Although my response showed no imagination or foresight, it was quite rational within the conservative corporate culture of my employer. Retinal “scanning,” which had just undergone a large test funded directly by U.S. Federal legislation, was gaining traction within the government as an eye-based biometric recognition technology and was already being used for access control to classified government spaces. Did we really need another eye-based recognition method and could this iris upstart unseat retinal scanning?

Now, 25 years later, we have seen the answer clearly. The original accuracy claims were verified through large-scale testing and the phase-based implementation turned out to be both novel and ingenious. Retinal scanning systems are no longer used or marketed (although the words “retinal scanning” continue to linger in the press); iris recognition has become the dominant eye-based biometric technology, with applications in National ID systems, border crossing and facility access control; iris systems rival or surpass even fingerprinting in accuracy and ease of use; and, with the expiration of the early patent claims inhibiting adoption, iris systems are now available on a commercially competitive basis.

Although iris recognition has matured from a disruptive technology to what philosophers of science would refer to as “normal science,” there is no shortage of continuing research questions. This second edition of the *Handbook of Iris Recognition*, which is a significant expansion in scope and in length just 4 years after

the highly successful 2012 first edition, serves to emphasize that point. The four additional chapters and nearly 300 additional pages consider new research in iris template security, eye disorders, SDK development, and off-angle image correction. In the 4 years intervening between editions of this handbook, iris recognition has been applied to a billion persons in India—not in a trial, but within a full-fledged National Identification System.

In a review of the first edition, as published in *IET Biometrics*, I said, “It is impressive how this human recognition technology has matured scientifically and found a commercial market in such a relatively short time, due in large measure to the effective research, development and advocacy of Prof. Daugman.” I continue to stand behind that statement. Although some advancement of eye-based recognition technologies might have been inevitable, the rapid and widespread success of iris recognition must be seen as owing directly to the tenacity and genius of John Daugman. No other biometric technology owes its existence so completely to a single individual. This story should serve as a great inspiration to all of us—a lesson that unwavering passion for a subject can bring tremendous success.

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