It was just 20 years ago that A. B. VanderLugt, "Bud" to his friends and associates, had the flash of insight to realize that holography could be applied to the problem of recording the complex conjugate of a function, and thereby render possible the implementation of the correlation of two arbitrary functions optically. It is with his achievement in mind that we dedicate this special issue of *Optical Engineering* to the subject of Optical Pattern Recognition.

At that time I was fortunate enough to be at the University of Michigan in Ann Arbor, where I was just completing my own graduate education. It was an exciting time. The laser and Leith-Upatnieks off-axis holography were both still quite new. Optical signal processing had just gotten started. I became so caught up in this excitement that I decided then and there to switch fields from solid state electron spin resonance to this new kind of optical science. I have never regretted my decision, although in the early 1970s, when optical signal processing suffered some reverses, I had my doubts.

The field has come a long way during the ensuing 20 years. Progress has been made in both the hardware, e.g., spatial light modulators and compact IR laser sources, and software, e.g., algorithms for dealing with some of the inherent difficulties with the correlation approach. The papers in this issue feature the work of a stellar group of authors/scientists who present examples of advances in both of these areas.

Bud VanderLugt has kindly written his thoughts on the progress in the field of pattern recognition over the past two decades. His thought-provoking article, which also outlines the papers contained in this issue, appears as the Special Guest Editorial on the following two pages. In the same vein, an article written by the late D. J. Lovell (see the "SPIE Reports" section of this issue) reviews the history of Bud's invention. I urge all readers interested in this topic to read these two articles.

Finally, I would like to thank all the authors whose papers are included in this special issue on Optical Pattern Recognition for contributing their papers and for bearing with me through the sequence of revisions that are necessary to achieve a high level of scientific writing. With your help, we have produced what I think is a fine piece of work, one that will illuminate and inspire further research in this field.

Anthony (Bud) VanderLugt

Guest Editorial

Optical Pattern Recognition

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