At the start of the 20th century, national economies on the international scene were, to a large extent, agriculturally based. This was, perhaps, the dominant reason for the protraction on the international scene of the Great Depression, which began with the Wall Street stock market crash of October 1929. After World War II, the trend away from agriculturally based economies and toward industrially based economies continued and strengthened. Indeed, today, in the United States, approximately only 1% of the population is involved in the agriculture requirements of the U.S. and, in addition, provides significant agriculture exports. This, of course, is made possible by the greatly improved techniques and technologies utilized in the agriculture industry.

The trend toward industrially based economies after World War II was, in turn, followed by a trend toward service-based economies. In the United States today, roughly more than 70% of the employment is involved with service industries — and this percentage continues to increase. Separately, the electronic computer industry began to take hold in the early 1960s, and thereafter always seemed to exceed expectations. For example, the first large-scale sales of an electronic computer were of the IBM 650. At that time, projections were that the total sales for the United States would be 25 IBM 650 computers. Before the first one came off the production line, IBM had initial orders for more than 30,000. That was thought to be huge by the standards of that day, and today it is a very miniscule number, to say nothing of the fact that its computing power was also very miniscule by today’s standards. Computer mainframes continued to grow in power and complexity. At the same time, Gordon Moore, of “Moore’s Law” fame, and his colleagues founded INTEL. Then, around 1980, MICROSOFT was founded, but it was not until the early 1990s, not that long ago, that WINDOWS was created — incidentally, after the APPLE computer family started. The first browser was the NETSCAPE browser, which appeared in 1995, also not that long ago. Of course, computer networking equipment, most notably CISCO’s, also appeared about that time. Toward the end of the last century the dot.com “bubble” occurred and “burst” around 2000.

Coming to the new millennium, for most of our history the wealth of a nation was limited by the size and stamina of the workforce. Today, national wealth is measured in intellectual capital. Nations possessing skillful people in such diverse areas as science, medicine, business, and engineering produce innovations that drive the nation to a higher quality of life. To better utilize these valuable resources, intelligent systems technology has evolved at a rapid
and significantly expanding rate, and can be utilized by nations to improve their medical care, advance their engineering technology, and increase their manufacturing productivity, as well as play a significant role in a wide variety of other areas of activity of substantive significance.

The breadth of the major application areas of intelligent systems technology is very impressive. These include the following, among other areas: agriculture, electronics, business engineering, chemistry, environment, communications, geology, computer systems, image processing, education, information, management, military, law, mining, manufacturing, power systems, mathematics, science, medicine, space technology, meteorology, and transportation.

It is difficult now to imagine an area that will not be touched by intelligent systems technology.

Artificial Intelligence and Integrated Intelligent Information Systems: Emerging Technologies and Applications edited by Xuan F. Zha, a leading contributor to intelligent systems technology, consists of five well-integrated broad subject area sections. There are four chapters in each section and, in all, there are 38 coauthors. These coauthors from academia and government institutions are among the leading contributors to intelligent systems technology on the international scene.

Intelligent systems technology has come a long way in a relatively short time. The early days were spent in a somewhat probing fashion, where researchers looked for ways to develop methods that captured human intelligence. After considerable struggle, they fortunately met with success. Armed with an understanding of how to design an intelligent system, they went on to solve real-world problems. At this point, intelligent systems took on a very meaningful role in the broad area of information technology. Along the way, there were a few individuals who saw the importance of publishing the accomplishments of intelligent systems technology, thus providing guidance to advance the field. Among this small group, I believe that Dr. Zha has made among the largest contributions to this effort. I believe his latest work in this volume he created and edited is one of his most valuable contributions to date and should be in the possession of all individuals involved in the field of intelligent systems technology.

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