

Preface

Artificial Intelligence (AI) is a field of study related to getting computers to achieve intelligent tasks. Research is predominantly software based, however, requires and incorporates technology to build new or innovative tools that ultimately benefit society. Industry continues to invest in AI, with many creating internal research facilities. The entertainment industry was a heavy investor in the twentieth century, although value engineers continue to mechanize industry, resulting in a shift towards more intelligent robots and unmanned systems. Another growth area is in the field of medical imaging, monitoring and portable healthcare products.

Two major research threads have manifested in semantic programming. These include: AI and Knowledge Engineering support of domain specific applications. Intelligent Systems are becoming ubiquitous in a wide range of situations. These include facets of simple everyday actions on mobile devices through to more advanced enterprise level applications in logistic systems and the medical domain. Society benefits daily, using applications to deliver digital news, socialisation and enhancements derived from expert decision making in knowledge-based systems. Knowledge Engineering relies on the exploitation of AI techniques to employ human-like intelligence in machine systems, tailored to solve specific problems. Hence, researchers continue to improve existing techniques within the domain.

This evolution in Information Processing has become a pervasive phenomenon within the community. Mobile computing continues to promote the ubiquitous access to information resources. Technology is enabling increased processing capabilities to hand-held devices, forcing more innovative access techniques to existing intelligent systems. Society is beginning to demand everyday applications that provide convenient access to the wealth of information processing systems serving the public. To achieve this, we must take advantage of the most recent research in information technologies.

We have chosen a dozen world class contributions from leading-edge researchers to provide readers with the ability to explore cutting edge examples of this evolution in a single volume. With over 50 years of combined experience in promoting and sharing advancements in AI and Knowledge-Based engineering, the editors are proud to offer this ensemble of experts and the wealth of knowledge presented. The reader is encouraged to read the introduction for initial direction prior to focusing on their topic of interest. They are also encouraged to extend their

interest to the remaining chapters for an up-to-date exposure to a diverse range of modern AI topics and techniques. Several chapters are also dedicated to employing AI methodology to a diverse range of problems in the industry. We hope you enjoy the innovations presented as much as we did shepherding these contributions into print.

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Recent Advances in Knowledge-based Paradigms and
Applications

Enhanced Applications Using Hybrid Artificial
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