IAAI–05 Preface

The Seventeenth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-05) opens some new dialogs about the relationship of AI and business service networks on the Web, AI applications based on new findings from the neurosciences, and real-world applications of genetic programming. Our presentations also continue the IAAI tradition of including both case studies of deployed applications and papers on emerging AI applications. Each of the deployed applications papers include measurements of the benefits provided by AI technology, and add to the growing body of evidence that AI has already produced tremendous application value.

IAAI is organized as an independent program within the National Conference, with schedules coordinated to allow attendees to move freely between AAAI and IAAI sessions. We appreciate the cooperation of the AAAI organizers, since we believe the collocated conferences both benefit from each other.

Basic AI research benefits by exposure to the challenges of real-world domains and difficulties and successes in applying AI techniques to real business problems. AI applications developers benefit from learning about the latest AI techniques that will enable the next generation of applications. IAAI-05 addresses the full range of AI techniques including knowledge-based systems, genetic programming, neurological modeling, planning and scheduling, perception and monitoring, knowledge acquisition, knowledge management, learning, intelligent design, natural language processing, pattern recognition, and diagnostic reasoning.

Deployed Applications are case studies that provide working guidelines on designing, building, managing, and deploying systems incorporating AI technologies. This year's papers address applications in a wide variety of domains, including security, control systems, scheduling, underwriting insurance claims, selling financial services, monitoring, and protein structure determination. These applications provide ample evidence of the impact and economic value that AI technology has today, and will have in the future.

The wide variety of quality papers on emerging applications and technologies describe efforts whose goal is the engineering of AI applications. They inform AI researchers about the utility of specific AI techniques for application domains and also inform application developers about the emerging tools and techniques that will enable the next generation of new and more powerful applications.

The Robert Engelmore Memorial Award and Lecture for 2005 will be given by Jim Hendler. Hendler continues to be a pioneer in the development of the semantic web. His talk will center on a topic Bob Engelmore cared deeply about: the enabling power of knowledge.

Jay M. Tenenbaum, CEO of many successful eCommerce startups, will give an invited talk

on "Building the Web of Tomorrow Today." Tenenbaum saw the commercial applications of the web long before they actually happened, and his vision of the power of AI, integrated into networks of business service applications, is compelling.

IAAI-05 is pleased that Jeff Hawkins, director of the Redwood Neurosciences Institute, and the architect of the PalmPilot, Visor, and Treo devices, will speak on the topic "AI Winter into Spring: Can a New Theory of Neocortex Lead to Truly Intelligent Machines?" In his recent book *On Intelligence,* Hawkins proposed that the neocortex can be understood as a hierarchical sequence memory. Since the book was written, the theory has been formalized as a modified belief propagation network. Hawkins will describe the basics of the theory, demonstrate a working prototype, and discuss its potential impact on the AI community.

Genetic programming (GP) techniques have long been part of the AAAI and IAAI conferences, but they are still underappreciated in terms of the wide variety of application problems they have addressed and solved. Part of this is cultural, since the GP community has its own conference. We wanted to invite them into the IAAI community to make the case for the applicability and maturity of their techniques. Martin Keane, coauthor with John Koza of *Genetic Programming III,* will give a talk on the "Real-World Applications of Genetic Programming."

The Innovative Applications of Artificial Intelligence Conference could not take place without the generous help of many people. In particular, we very much appreciate the hard work and dedication of the IAAI-05 program committee, without whom the technical program would be impossible: William Cheetham, Steve Chien, Diane Cook, Alex Hartemink, Yolanda Gil, Karen Haigh, Micheal Hewett, Diane Littman, Risto Miikkulainen, Bruce Porter, Elaine Rich, John Riedl, Ted Senator, Howie Shrobe, Reid Smith, Jim Spohrer, Ramasamy Uthurusamy, and Peter Wurman. We want to acknowledge the professional administrative and planning expertise of Carol Hamilton, Keri Harvey and the entire AAAI staff. They are great to work with, and they make this conference possible. Thanks to the authors of technical papers submitted to IAAI, both selected and rejected. They provide the evolutionary basis of a quality learning experience. We also want to thank our extraordinary speakers this year. They took time out of very compressed schedules to share their insights interactively with the participants in IAAI-05.

Join us in the accelerating AI applications dialog, and enjoy the conference!

– Neil Jacobstein & Bruce Porter