Preface

The organizers of the symposium on quantum interaction are interested in combining AI and quantum mechanics. Quantum interaction (QI) is emerging from physics into other domains such as human language, cognition, information retrieval, decision-making, biology, political science, organizations, and artificial intelligence. The QI model has already been applied to the field of social interaction (quantum game theory).

This symposium is bringing together researchers interested in applying: (1) QI to address AI problems in nonquantum domains; (2) AI to QI (for example, quantum-based agent models); or (3) QI with AI to address previously unsolved problems in other fields (for example, organizational decision-making). The organizers are also interested in whether a QI approach to AI can be supported by field results in a specific content area such as, for example, nonmonotonic reasoning.

The technical report includes 18 long papers, two position papers, and three carefully selected invited presentations. Long papers cover some of the following topics reflecting traditional aspects of AI reinterpreted from a quantum perspective:

- Multiagent protocols using quantum entanglement
- Interconnections of quantum, machine and human learning
- Quantum structures in linguistics and multiagent systems
- Quantum theory and information retrieval
- Automated quantum reasoning
- Quantum causal networks and Markov entanglement networks
- Quantum interactions between inference and decision-making
- Quantum information dynamics
- Semantics motivated from quantum theory
- Quantum effects in human memory
- Quantum agency

The position papers promote thought-provoking ideas in the more embryonic stages:

- Quantum foundations of consciousness
- The application of quantum theory to economic modeling

The three invited papers by distinguished scientists cover:

- Quantum logic
- Quantum mechanics and the brain
- Quantum information processing
Quantum interaction is a cross-disciplinary field in its formative stages. Therefore invited speakers have been selected from philosophy of science, quantum logic, quantum computing and physics disciplines. The organizers encourage meeting participants, especially graduate students, to shape the future direction of this new field. This pioneering conference has the goal of seeding a community.

In addition to the technical report, the meeting will be reviewed in *AI Magazine*. Also, one or two edited books are being planned for selected papers from the conference.

Finally, welcome to Stanford and we look forward to a stimulating forum!

*Peter Bruza, William Lawless, Keith van Rijsbergen, and Donald Sofge*