Foreword

Computer-based link analysis is increasingly used in law enforcement investigations, insurance fraud detection, telecommunications network analysis, pharmaceuticals research, epidemiology, and a host of other specialized applications. Link analysis explores associations among large numbers of objects of different types. For example, a law enforcement application might examine familial relationships among suspects and victims, the addresses at which those persons reside, and the telephone numbers that they called during a specified period. The ability of link analysis to represent relationships and associations among objects of different types has proven crucial in assisting human investigators to comprehend complex webs of evidence and draw conclusions that are not apparent from any single piece of information.

However, there is both a need and opportunity to apply new technologies. Much of the current software for link analysis is little more than a graphical display tool. While visualizing networks has proven useful, many advanced applications of link analysis involve thousands of objects and links as well as a rich array of possible data models. Manual construction and analysis of such networks has proven difficult. In addition, a large number of related techniques in artificial intelligence and several other fields have the potential to assist human reasoning about complex networks of relationships. These techniques draw on work from search, semantic networks, ontological engineering, autonomous agents, inductive logic programming, graph theory, social network analysis, knowledge discovery in databases, entity-relationship modeling, information extraction, information retrieval, and metaphor.

This two-and-a-half day symposium brings two communities into contact: 1) Members of the research and development communities who currently have (or could soon develop) useful technology; and 2) Users of link analysis techniques whose needs go beyond the capabilities of current software. The goals of the symposium are to create a common understanding of the issues involved in complex link analysis applications, the challenges they place on current systems, and the potential applications of a number of AI technologies to the automated analysis of linked data. Note that the focus of the symposium is on new technologies, not capabilities and applications embodied in current software. By bringing these two communities together, we hope to devise a research agenda which will result in new capabilities that can be developed and deployed within 3-5 years.

We thank the staff of AAAI and the 1998 Fall Symposium Program Committee for their expert assistance in organizing and publicizing the Symposium. We also thank our colleagues on the Symposium organizing committee for their thoughtful advice and assistance. Finally, we thank the Symposium participants, whose interest and technical contributions made the meeting worthwhile. Organizing this Symposium has brought us into contact with a remarkably diverse and dynamic community of researchers, developers, and users. We hope that together, this interdisciplinary community can create new tools and techniques for the analysis of linked data.

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