



COMPUTATIONAL INTELLIGENCE

CALL FOR PAPERS

This leading international journal promotes and stimulates research in the field of artificial intelligence (AI). Covering a wide range of issues - from the tools and languages of AI to its philosophical implications - Computational Intelligence provides a vigorous forum for the publication of both experimental and theoretical research, as well as surveys and impact studies. The journal is designed to meet the needs of a wide range of AI workers in academic and industrial research. The *Computational Intelligence* journal is distinguished from the other leading AI journals by its focus on several emerging areas of Artificial Intelligence, none of which yet have a primary venue for the publication of their results.

1. Machine learning - including in particular symbolic multi-strategy and cognitive learning

Multistrategy learning systems integrate two or more inference types and/or representational mechanisms. These systems take advantage of the strengths of individual learning strategies, and therefore can be applied to a wider range of problems. Human learning is clearly not limited to any single strategy, but can involve any type of strategy, or a combination of them, depending on the task at hand. Research on multistrategy learning is therefore a key to understanding learning processes in general, to making progress in machine learning, as well as to extending the applicability of current machine learning methods to new practical domains.

2. Web intelligence and Semantic Web

Web intelligence is concerned with the application of Artificial Intelligence to the next generation of Web systems, services and resources. These include better search/retrieval algorithms, client side systems (e.g., more effective agents) and server side systems (e.g., effective ways to present material on Web pages and throughout Web sites, including adaptive websites and personalized interfaces). The Semantic Web is an extension to the World Wide Web, in which web content is expressed in a form that is accessible to programs (software agents), following the vision of the web as universal medium for data, information and knowledge exchange.

3. Discovery science and knowledge mining

Discovery Science (also known as Discovery-Based Science) is a scientific methodology which emphasizes analysis of large volumes of experimental data or text data with the goal of finding new patterns or correlations, leading to hypothesis formation and other scientific methodologies. Tools of interest include: Data Mining: looking for associations or relationships in operational or transactional data; Text Mining and Information Extraction: looking for concepts and their associations or relationships in natural language text. Structured, semi-structured and unstructured text mining; Text Summarization: extracting terms and phrases from large text document collections that summarize their content; Web mining: Web structure, content and usage mining; Ontology Learning from

4. Agents and Multiagent systems

Agents as a computational abstraction have replaced "objects," and have provided the necessary ingredients to move to societies of interacting intelligent entities, based on things like the belief-desire-intention (BDI) model of agent societies, market economies, e-commerce models and game theory. Such abstractions are dispersed throughout the scientific world, depending largely on applications. Multiagent systems (MAS) are systems in which many intelligent autonomous agents interact with each other. Agents can be either cooperative, pursuing a common goal, or selfish, going after their own interests. Architectures, interaction protocols and languages must be developed for multiagent systems. Topics of interest include: Autonomy-oriented computing; Agent systems methodology and language; Agent-based simulation and modeling; Agent-based applications; Agent-based negotiation and autonomous auction; Distributed problem solving

5. Modern knowledge-based systems

Knowledge-based systems aim to make expertise available for decision making, and information sharing, when and where needed. The next generation of such systems needs to tap into large knowledge bases of domain-specific knowledge, which combine machine learning and structured background knowledge representation, such as ontology, and causal representations and reasoning. Information sharing is concerned with creating collaborative knowledge environments for sharing and disseminating information.

6. Key application areas of AI: Entertainment and Gaming, Software Engineering, Business, Finance, Commerce and Economics, Knowledge-based and Personalized User Interfaces

The aim is to make the journal the focus of key application areas, where Artificial Intelligence is making a significant impact, but lack a coherent publication venue. These include: Entertainment and Game Development, i.e. building game engines using AI techniques; Software Engineering, including program understanding, software repositories and reverse engineering; Business, Finance, Commerce and Economics: learning aggregate behaviours (e.g. stock market trends) or modeling individual and group demographics (e.g. web mining); Knowledge-based and personalized user interfaces, to make interaction clearer to the user and more efficient, with better support for the user's goals, and efficient presentation of complex information.

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