



# Research Directions

Office of Research Services

## ***Nonmonotonic Logic Programming for Complex Knowledge Systems***

Associate Professor Yan Zhang, School of Computing and Mathematics, is undertaking research into computer framework programming. This ARC Discovery project aims to explore the foundations of nonmonotonic logic programming. This form of programming is much more flexible for knowledge representation and reasoning compared to other traditional approaches.



In layman's terms, logic is monotonic if the truth of a proposition does not change when new information is added to a system. In contrast, non-monotonic logic may change the truth of a proposition when new information is added to or old information is deleted from the system. Nonmonotonic logic programming has proved to be one of the most promising technologies for building knowledge systems for security systems, automatic legal reasoning systems, auction systems and robotic planning systems.

The research will tackle some fundamental issues faced by computer programmers in representing knowledge in complex problem domains. 'The project will develop new methodologies and technologies' said Professor Zhang. 'In particular, we will develop an enhanced nonmonotonic logic programming language that is able to represent and reason about complex notions of knowledge and beliefs. Based on this new programming language we will create a system prototype to demonstrate its usefulness in various areas'.

The expected outcome will be new nonmonotonic logic programming that can be used as an effective platform by many Australian computer companies building complex knowledge systems in real world domains.

**Project Title:** *Foundations of Nonmonotonic Logic Programming for Complex Knowledge Systems*

Funding has been set at: \$234,000.  
May 2006.

### Contact Details

[y.zhang@uws.edu.au](mailto:y.zhang@uws.edu.au)

<http://www.uws.edu.au/about/acadorg/schools/computingandmathematics>