

# MEMETIC ALGORITHMS AND MEMETIC COMPUTING



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA

Thirty years ago, Professor Moscato created an entirely new field of computer science known as “memetic algorithms”—labelled one of the greatest research frontiers in the combined fields of mathematics, computing and engineering. Today, more than 22,100 academic papers cite the subject, a number that grows steadily each day.

## COMPETITIVE ADVANTAGE

- Founder of the technique
- Championed the field
- A central hub of a vast network of nearly 4000 researchers around the world that work in this area
- More than three decades of experience in High-Performance Computing solutions
- Nearly 35 years of experience in solving challenging optimisation problems
- Started the field of “Evolutionary Attack of Algorithms” in 2003
- Member of Caltech Alumni Association

## SUCCESSFUL APPLICATIONS OF RESEARCH

- Four Australian Research Council Discovery Projects, and Australian Research Council Centre of Excellence and an Australian Research Council Future Fellowship, and all contained activities in memetic algorithms
- “Business and Consumer Analytics: New Ideas”, Springer, 2019.
- Supervised nearly 50 research projects during the past 16 years supported by National Health and Medical Research Council, Cancer Institute of NSW, Australian Research Council, National Institutes of Health United States of America (USA)

## PARTNERS

- Australian Research Council
- National Health and Medical Research Council
- Cancer Institute of NSW
- National Institute of Health, USA
- Rotary International
- Erasmus Mundus (Smart Cities project)
- Advisor to data-driven AI-centric companies including: Complexica and Lab5 Systems

## IMPACT

The importance and influence of memetic algorithms has grown such that Thomson Reuters selected it as one of the top ten research fronts in the combined fields Mathematics, Computer Science and Engineering in 2013

## CAPABILITIES AND FACILITIES

Large management experience as Founding Director of both the Newcastle Bioinformatics Initiative and the Priority Research Centre in Bioinformatics, Biomarker Discovery and Information-based Medicine