

**INTRODUCTION**

Imagine that it is the year 2091 and your shipboard nanobots attempt to repair some meteor damage. Do you trust them to do the job right? Imagine that it is the year 2061 and the city of New York launches a new surveillance system consisting of a swarm of autonomic microflyers. Do you feel secure? Imagine that it is the year 2031 and there is the first android team that challenges a human soccer team for the ceremonial opening game at the world soccer championships. Which team do you put your money on?

It is the year 2006 and where are we now? We are still 25 years away from the first future scenario above, but already on the edge of pioneering a new generation of design methods and techniques for large-scale, autonomous and adaptive systems. Bridging nature and technology, such designs will draw inspiration from nature (evolution, ecology, social interaction) and apply this to technological challenges (robotic systems, embedded devices, autonomic computing). And the other way around, current computer simulations use decentralized models that assist in predicting the spread of epidemics (bird flu) or giving insights in ecological collapse.

We organise the DESIGN OF COLLECTIVE INTELLIGENCE workshop to get together master/graduate students that are interested in finding about these new developments and want to get some hand-on experience with implementing learned theories and strategies.

**DECOI: A NEW INITIATIVE**

Self organizing collective intelligence is all around us. We observe all kinds of self organizing patterns in flora and fauna. Also many IT applications nowadays involve self organization, for example, swarms of robots, computer clusters, artificial life applications, etcetera. Recent research in Artificial Intelligence looks at the analysis and design of collective intelligence within such groups of entities. Evolution, learning, social interactions and other adaptation mechanisms make such intelligence possible. DECOI 2006 emerged because of the increasing popularity of this field of knowledge. Our intention is to make DECOI a regular event on the scientific calendar, and establish a unique event that crosses the boundaries between many disciplines.

**DECOI 2006: MAIN SETUP**

The main aim of this summer school is to provide students with cutting-edge knowledge on increasingly important themes like: artificial life, self-organization in decentralized systems, adaptation and methods using evolutionary computing. On a theoretical level this is realized by a series of lectures by experts from various domains. To provide participants with hands-on experience a programming task will be presented in which teams of participants can implement these theories and strategies. The main theme of this task is generating a smart social system of agents; a collectively trying to solve a given task.

The software environment used during this summer school is BREVE, a 3d simula-

tion environment for multi-agent simulations and artificial life. One of the main advantages of BREVE is that it combines a relatively easy programming environment with spectacular 3d-graphics. In the spirit of collective intelligence, we will provide a trophy for the group that completes the task in the most successful way: the DECOI-trophy 2006. Since the time for this task is limited, it is vital that participants have some programming experience. The DECOI organization will provide both a general agent, a basic set of interaction protocols and a 'world' in which the task has to be performed. Participants have the option to already work on their system before the workshop; the necessary files will be available on the website.

In the period after the summer school, the proceedings of both the theoretical and the practical parts are presented on Internet. This means that lectures as well as the agents developed by the teams will be available for further research and publication.

**THE DEPARTMENT OF COMPUTER SCIENCE AT THE VU**

The Vrije Universiteit is well known for the excellent research quality and organization of its education. At the VU Campus, interdisciplinary cooperation is accommodated in an optimal way, as all faculties, covering a broad field of disciplines, are located on this campus. This offers a lot of opportunities for research and educational projects. About 17,000 students attend the university, with 2,200 scientific employees, and 1,600 non-scientific employees. The Department of Computer Science has a wide range of bachelor and master programs covering a significant part of the field of computer science: artificial intelligence, computer systems, software engineering, formal methods, business informatics, business mathematics and bioinformatics. The staff includes many well known researchers in the areas of evolutionary computing, computer systems, distributed computing, semantic web technology and multi-agent systems.

Closely located to the city centre of Amsterdam, the Vrije Universiteit is the ideal location for discovering cutting-edge science in a socially and vibrant environment!

**DECOI 2006: A RICH EXPERIENCE**

Apart from gaining knowledge and insights on the topic of collective intelligence and evolution, DECOI also connects people. Since master/graduate students often only have modest means to attend conferences, DECOI 2006 can open up new opportunities in expanding your (international) network of people within the field. During drinks, dinners and other social activities there will be plenty of time to share experiences and ideas with others. Of course, DECOI 2006 provides a great opportunity to explore the city of Amsterdam, which provides a wide variety of activities.

DECOI 2006 could also be a start for further research, and provide a seed for your masters/graduate project. The academic environment as well as the participating experts will ensure a high level of quality.

We hope to welcome you on DECOI 2006, and provide you with an experience that is fresh and lasting!

## DECOI 2006

INTERNATIONAL SUMMER SCHOOL ON COLLECTIVE INTELLIGENCE AND EVOLUTION  
7-11 AUGUST 2006, AMSTERDAM

### ORGANIZING COMMITTEE:

Dr. Martijn Schut, Vrije Universiteit Amsterdam

Konrad Diwold, Vrije Universiteit Amsterdam

Ir. William Veerbeek, Vrije Universiteit Amsterdam, DIN\_arch, Rotterdam

Hosted by the Department of Computer Science, Vrije Universiteit Amsterdam.

Location: Faculty of Sciences, Boelelaan 1081, Amsterdam

CHECK FOR MORE INFORMATION AND REGISTRATION FORM AT: [www.decoi2006.nl](http://www.decoi2006.nl)

Registration is open for Master/Graduate students in computer science, Artificial Intelligence, Business Informatics and Bio Informatics. Workshop fee is €50.00 if you register before June 1st. After June 1st the fee is €75.00. The registration fee should be paid in advance. Fee includes use of facilities, free entry to lectures, refreshments. Cost for accommodation are NOT included. Entry is limited to 30 participants. Early registration improves chances of participation. Registration, extensive information and recent news on: [www.decoi2006.nl](http://www.decoi2006.nl).

**DECOI 2006** IS MADE POSSIBLE WITH THE GENEROUS SUPPORT OF:



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# DECOI

LECTURES  
WORKSHOP  
TOURNAMENT

[WWW.DECOI2006.NL](http://WWW.DECOI2006.NL)

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