



ARTIFICIAL ECONOMICS

Symposium in Agent-based Computational Methods in Finance, Game Theory and their applications

September 15–16 2005, Lille

<http://cisco.univ-lille1.fr/ae2005>



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FORM

The symposium will last two days and will take place in Lille, which is very well connected to most major European cities. Exchanges and discussions will have a large space in the final programme. It will offer presentations of papers selected by the programme committee as well as special invited keynote sessions :

Dr Robert AXTELL,

from The Brookings Institution/Santa Fe Institute, will make a talk temporarily entitled *Very Large Scale Multi-Agent Systems and Emergent Macroeconomics*.

Pr Cristiano CASTELFRANCHI,

from ICST/University of Siena, will make a talk temporarily entitled *The Invisible (Left) Hand*.

CONTACTS

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CONTEXT

Agent-based Computational Economics (ACE) deals with the computational study of economies as complex adaptive systems implying interacting agents with cognitive skills. This area has provoked, in various fields of Economics, a great deal of academic interest, in relation with the Complex System approaches.

One of the first use of agent based models has been popularized by Axelrod in his theory of evolution of cooperation. In this early work he used extensively computational simulations and methods in order to study strategic behaviour in the iterated prisoner's dilemma. This work is still influencing many researches in various scientific fields. It has for instance been the foundations of a new approach of the game theory based on computational ideas.

In the mid eighties, under the impulsion of the Santa-Fe Institute, and especially Christopher Langton, a new field of research, called Artificial Life (AL), has emerged. The idea of AL was to mimic real life under its various aspects to understand the basic principles of life. This has led to encompass wider ideas such as complexity, evolution, auto-organisation and emergence. All concepts induced by those approaches have influenced social scientists among others.

Following those initial attempts to mix computational approaches and social sciences, for instance among the pioneering works using ACE in finance, one can refer to the Artificial Stock Market by Palmer, Arthur, Holland, LeBaron, and Taylor. This model, based on bounded rationality and inductive reasoning, is one of the first allowing correct simulations of real world stock market dynamics. This work has been done by people coming from various scientific fields (Economics, Game Theory, Computer Science and Finance).

Recently, another growing field appeared, dealing with the study of the formation and the dynamics of social networks. To understand the spread of information as well as the social beliefs one has to consider the underlying social networks that can have different effects on those processes. This special topic is another where physicists, computer scientists and economists join their efforts to explore the idea that economic activity is embedded in social structure.

All those approaches intensively use computer simulation as well as artificial intelligence concepts mostly based on multi-agents systems. In this context, the most used models come from game theory.

Therefore, Agent-based Computational Economics is more and more an important methodology in many Social-Sciences (the Management Sciences, Sociology, Economics, Conflicts Resolution, etc). It becomes now widely used to test theoretical models or to investigate their properties when analytical solutions are not possible.

AIMS & SCOPES

The main aims of the event are to:

- present computer-science based multi-agent methodologies and tools with their applications to social-scientists (mainly people from economics and the management sciences)
- present uses and needs of multi-agent based models and their constraints, as used by those social scientists, to computer scientists
- favor the meeting of people and ideas of those two communities in order to be able to construct a much structured multi-disciplinary approach.

For its first edition, the Symposium will thus present recent scientific advances in the fields of ACE but is also widely open to methodological surveys. Topics include but are not limited to the following :

- Computational Game Theory (*Non-Cooperative, Cooperative, Evolutionary, Pure coordination Games...*)
- Discrete choice models in Economics and the Management Sciences
- Emergence and dynamics of Norms and Conventions
- Financial Market and Organization Models (*Stock prices dynamics, Herding in Financial Markets*)
- Epistemology and Agent-based Methodological issues
- Dynamics of social and economic networks

SUBMISSION

Short version of paper presenting aims & scopes, relevant literature and original works, has to be sent by electronic mail and in acrobat (.pdf) format to the following address :

ae2005@univ-lille1.fr

Short versions of the paper **must be 5 pages long**. Authors should respect Springer typesetting guidelines. Formatting instructions for the papers are available through the website of the symposium at:

<http://cisco.univ-lille1.fr/ae2005>.

Proceedings of the symposium will be published as a volume of the *Lecture Notes in Economics and Mathematical Systems* serie published by Springer. After the event we plan to publish a special issue of a journal presenting some selected papers, which may have been modified after remarks and discussions done during the conference.

March 1st, 2005
April 8th, 2005
June 1st, 2005
September 15–16, 2005

Submission of papers
Notification of acceptance
Final paper due
Artificial Economics in Lille