

"1 DECEMBRIE 1918" UNIVERSITY OF ALBA IULIA

Faculty of Informatics and Engineering

Department of Computer Science, Mathematics, and Electronics

The Center for Mathematical and Computer Science Research carries out its activity in the field of fundamental and applied research in the field of Mathematics and Computer Science, with orientation towards the development of science, education, economy, services and community relations, in today's society, almost any field, from medicine to industry, is based on applied research in these two major fields.

The various scientific interests of the members of the centre focus on preoccupations and results obtained on topics aligned with the needs of science and society, in the area of applied and interdisciplinary research, the main directions approached being Data Mining and Intelligent Agents, Geometric Theory of Functions, in particular, Univalent Functions and Integral Operators, Dynamical Systems, Natural Computing: Computational Models Inspired by Nature and Applications in Optimisation and Machine learning, respectively.

Thus, the research topics concerned are part of the vast area of symbiosis between Mathematics and Computer Science, stretching along a continuum between the two extremes, theoretical mathematics, based on classical scientific discoveries, valid even today and computer science, representing a constantly changing science. The research team's concerns are part of various points on this continuum, targeting the following specific topics:

- Research in the field of complex analysis and mathematical statistics;
- Studies in artificial intelligence;
- Studies for the development of support systems for distance learning in Intranet and Internet;
- Design and implementation of management systems in educational institutions;
- Research for identification and control of dynamic processes;
- Mathematical modeling of economic phenomena and design of information systems implementing these models;
- Design and implementation of information systems specific to the socio-cultural area;
- Creating and developing ways of informing communities.

Within this framework, the centre aims to generate and transfer knowledge by achieving the following objectives, with an impact on the higher education institution to which it belongs, but also on society:

- continuous training of research personnel in order to carry out advanced scientific research programmes;
- updating the base for fundamental research and applied research projects;
- identifying and using funding sources for research projects;
- initiation of fundamental and applied research projects;
- development of the material and information base for research;
- capitalisation of research results through different ways of informing communities, scientific communications, articles, patents, technology transfer, collective works of authors;
- establishing and strengthening scientific links with universities and research institutions abroad;
- inclusion of the activity of the Research Centre in the European circuit of scientific values;
- attracting to research projects teachers from pre-university education, as well as collaborators from other fields of activity who can support the Centre's activity;

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- providing consultancy on issues in the field;
- carrying out extracurricular activities focused on state of the art scientific topics in which students are also involved.

The collaboration with partners from the academic environment, both nationally and internationally, ensures the approach of state of the art issues of major importance in scientific research in the targeted fields.

Also, the partnership with the business environment provides new research objectives and opens the opportunity to transfer knowledge from the academic environment to the community, through the results of applied research that contribute to solving real-life problems, from production, which partners face and which can be solved through various mathematical models, and by developing specific computer applications, respectively.

By including students from the specializations of the Faculty of Computer Science and Engineering in the research programs of the centre, the sustainability of future research is ensured, in terms of human resources, and the transfer of expertise in the educational area is achieved through collaboration with the pre-university environment.

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Conf. univ. dr. Rotar Corina