

Fabio Maggio is a senior researcher of the Simulation and Modeling Group in the Bioinformatics Laboratory - lead by Anna Tramontano - at CRS4, a multidisciplinary research center specialized in high performance scientific computing, information and communication technology based in Pula (Cagliari), Italy.

F. Maggio joined the Simulation and Modeling Group in November 2006, moving from the Computational Method for Engineering Department at CRS4 (directed by G. Fotia), where he was the responsible of the Solid and Structural Mechanics Area. He has been visiting professor in mathematical analysis at the University of Sassari (Italy).

His main scientific interests concern high performance methods for numerical simulation, starting from the early '90 in collaboration with A. Quarteroni of the Ecole Polytechnique Fédérale de Lausanne, and the study of inverse and ill-posed problems using regularization techniques (collaboration with M. Bertero of the University of Genoa). In particular, he designed high order parallel methods for the treatment of partial differential equations with many degrees of freedom which have been applied to complex engineering applications in collaboration with important scientific and industrial partners. Among them: CERN (structural analysis of solid target subject to very high energy particle beam), Centro Ricerche FIAT (acoustics in vehicle engineering), AGIP (propagation of seismic waves in oil reservoirs). This activity has been supported by several Italian and European institutions, including EU, MIUR (Italian Ministry for University and Scientific Research), Sardinian regional authorities, and ASI (Italian Space Agency).

His present research regards:

- ✓ inference (by means of regularization methods for inverse ill-posed problems) and investigation of complex networks arising from computational biology (e.g. Gene/Protein Networks), including motif and community analysis (in collaboration with the RAGNO group at the CRS4 Bioinformatics Laboratory);
- ✓ the development of a novel statistical approach for the analysis of large scale datasets, based on parallel Support Vector Machine with non-linear kernel, exploiting parallel conjugate gradient for sparse matrices and optimized linear algebra kernels for cache-based architectures.

He has been responsible for CRS4 of several national and international research projects, in collaboration with European research centers and universities. He is author of a number of papers published on international journals and referee/editor for several scientific journals, including the International Journal for Numerical Methods in Engineering, Geophysics, Physics and Chemistry of the Earth.

Current Address: Fabio Maggio, CRS4, Bioinformatics Laboratory, Edificio 3, Sardegna Ricerche, 09010 Pula (Cagliari), Italy - E-mail maggio@crs4.it - Tel. +39.070.9250.431. Fax +39.070.9243.3114