Luigi Liquori

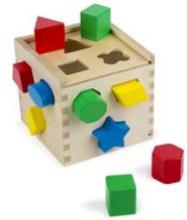## FSCD Steering Committee Election 2021

Election Statement
Object-oriented paradigm is the leading programming paradigm, but the functional one is growing in popularity. It is still possible the "one man show" (see e.g. Phyton invented by Guido van Rossum in CWI, the successor of ABC).

Rewriting-based paradigm is widely used in many Academiae but few knows that some rewriting-based tools are strongly used also in industry. Unfortunately there are relatively few languages that fully exploit that paradigm: Maude, Obj, ELAN, Clean, Wolfram ... just to mention a few. Sometimes, the above tools are sell as a Metaprogramming tools and some as Automatic Theorem Proving. Rewriting lacks of a some killer applications and success stories (*author personal opinion*). And this make Industry suspicious to use that tools. Because of all of this, there is some confusion about using rewriting-based paradigm and languages based to TRS. Some inspired companies are fast moving to functional languages like OCaml for general-purpose languages, or for Coq/Isabelle for Interactive Theorem Provers. The possibility to extract certified Caml running code makes those functional and logical tool very attractive.

Nevertheless, Rewriting-based paradigm has a very large potential fields of applications, probably even larger than one of functional or procedural languages. Just to mention a few:
- There are Telco companies (*omitted*) specialized in cybersecurity vulnerabilities developing HW box, analyzing CVE MITRE alerts described as a huge file of rewriting rules; often those projects are described with some internal TRS language or simulating in C/C++ some TRS and pattern matching algorithms.

- Pattern matching is the first "programming" paradigm that child (me too) learns: it is useful in a plethora of applications, from Telco, Web, Medical, Cybersecurity, just to mention a few. String matching algorithms like e.g. the Wu-Mamber (unix xgrep, biological applications, text processing, etc.) could be described in a very easy way using the rewriting-based paradigm, but unfortunately the is no efficient rewriting-based language that can compete with a dirty C/C++ implementation.

If I will be chosen in the SC of FSCD, i will try to "honestly push" the following topics in FSCD:
- Renewal of TRS paradigm in Industry;
- Pursue the hybridisation of Functional and Rewriting-based paradigm and subsequent languages, leading to a joint effort between the two FSCD communities; this would push the two communities to work together ;
- Promoting Type-Theories for TRS and Pattern-Matching based calculi and languages, since most of them are untyped;
- Approaching Industry to FSCD with an ad hoc track to be added to FSCD: theoretical topics that are attractive for industrial partners should be found (i will try to lead a group on a voluntary basis);
- Introducing a Student Symposium to FSCD (to increase more PhD vocation).

Short bio
Luigi Liquori, MS 1990 Udine University, Ph.D. 1996 University of Turin, H.d.R. 2007 Institut National Polytechnique de Lorraine. He served (for one year) the Centro Studi e Laboratori Telecomunicazioni (CSELT) of Telecom Italia and the École Normale Supérieure of Lyon. He was then Lecturer at the Ecole Nationale Supérieure des Mines de Nancy from 1999 to 2001. In 2001 it moves at INRIA the National French Institute for Research in Computer Science and Automation, where since 2010 it is Senior Researcher. Luigi Liquori research's fields range from Lambda-calculus, various Type Theories and foundations of Interactive Theorem Provers. It was also involved in Term Rewriting Systems and its hybridisation with Lambda-calculus, hence proposing various typed and untyped Pattern-calculi. It also studied various foundational Object-calculi offering a clear semantics of Object Oriented Programming (OOP) languages. He share a genuine interest in protocols and in particular Peer-to-Peer discovery protocols, Content-based Networking and Decentralised Social Networks. Recently it is involved with the European Telecommunications Standards Institute (ETSI), in a Standardisation efforts of IoT Resource Discovery Protocols and in defining a novel IoT-based Digital Contact Tracing against Covid-19 pandemics. Full CV HERE.