** PhD-level internship: Studying correlations in mobile traffic  
** Keywords: mobile data traffic, user mobility, context and content modeling, real-world datasets, statistical analysis  
** Starting period: Spring 2015  

-- General description --  
An intern position is available within the CHIST-ERA/ANR-funded project “MACACO: Mobile context-Adaptive Caching for Content-centric Networking”. The position is for a minimum of six months, and is intended for an experienced PhD student. The successful candidate will be based in the Inria Saclay – Île de France premises, close to Paris, France, and will carry out activities in cooperation with researchers at Inria, in Paris and Lyon, and at the National Research Council of Italy (CNR).

-- Research scope --  
The aim of the MACACO project proposes an innovative solution to the problem of managing the increased data usage and to improve the level of service required by the new wave of smartphones applications. Specifically, MACACO focuses on data offloading mechanisms that take advantage of context and content information. By extracting and forecasting the behavior of mobile network users in the three dimensional space of time, location and interest (i.e. ‘what’, ‘when’ and ‘where’ users are pulling data from the network), it is possible to derive efficient data offloading protocols. Building on previous research efforts in the fields of social wireless networking, opportunistic communications and content networking, MACACO address issues in this space.

-- Research objective --  
Specifically, the successful candidate will work on the characterization, design, implementation and evaluation of social context and content models. The goal of this modelling exercise is to link data usage and user behaviour over time and over space. This will be a data-driven exercise: The intern will have the opportunity to work with real-world datasets of mobile traffic, with the goal of identifying correlations at different levels (e.g., among space, time, mobility, data traffic, and specific services). We expect also the investigation of models for the classification of user behaviour in groups in order to improve the overall context and content forecasting methods. Finally, another key aspect will be the design and implementation of scalable computational solutions for online prediction of future context and content usage over time and space. The intern will be supported by faculties and students with significant experience on the topic[1,2,3].

-- Requirements --  
We are looking for a PhD student with a relevant publication track who is creative in proposing solutions and capable of critical analysis of results. We demand the student: 1) to have at least 18 months of doctoral studies; 2) to have excellent skills in scripting and programming (e.g., python, C/C++, Java); 3) to have a good track of publications (consistent with research experience) 4) to have a strong background in mobile networks analysis; 5) to be familiar with concepts related to complex networks, data mining, graph theory or social networks; 6) to be familiar with data analysis techniques and statistical tools; 7) to be fluent in spoken and written English with strong communication and presentation skills; 8) Experience with large-scale simulation, mobility modeling, and radio resource management for radio mobile networks (3G/LTE/LTE-A) are considered a plus.

-- Contact --  
Interested candidates should contact Aline Carneiro Viana (aline.viana@inria.fr) and Marco Fiore (marco.fiore@ieiit.cnr.it), by sending: *** their detailed curriculum vitae (including publications and references), a short motivation letter, as well as at least one recommendation letter ***.

References