

# Interactive assistant for DataViz in Business Intelligence

## Master Internship + PhD proposal

University of Tours, France, <http://www.univ-tours.fr>  
Computer Science Lab (Laboratoire d'Informatique Fondamentale et  
Appliquée de Tours (EA 6300)), <https://lifat.univ-tours.fr/>

**Expected background:** the candidate, involved in a computer science cursus (last year of Master studies), should have a background in at least one (or more) of the following domains: (visual) data mining, (interactive) knowledge discovery, data visualization, Human-Computer Interaction (related to data mining), OLAP, Business Intelligence, Data Science. About the technical skills: web app programming, D3js (or similar libraries).

**Funding:** 600€/month for the Internship, from the ANR Project BI4PEOPLE (<http://eric.univ-lyon2.fr/bi4people/index-en.html>),

**Duration:** from February to July (can be adjusted according to your Master's studies requirements).

**PhD proposal following the internship:** the candidate can apply to the PhD funding, 1600€/month with teaching service, duration of three years.

**Abstract:** The majority of DataViz users in Business Intelligence can be considered as novices with no specific expertise or knowledge about how to choose/define/configure data visualizations. Even the most advanced experts in the field have stated that "Data visualization is often more an art than a science", which underlines the difficulties that exist when one wants to automatize the definition of visualizations.

The problem of defining a relevant visualization that will efficiently let users discover information and knowledge from data is present in many real-world problems or interfaces. Many aspects must be considered: some are related to the user (her or his goals, level of knowledge, past experiences, etc.) and other are related to the visualizations (ability to efficiently represent the data, available interactions, etc.). If one sees this problem as a search problem (i.e., a search space of possible visualizations/configurations/data mappings that can be explored with operators, and with some sort of evaluation function), then the methods that can help users can be categorized as follows: 1) user assistants (heuristics based on expert knowledge, or user past experience), 2) exploration assistants (history mechanisms, etc), 3) optimization methods (explicit use of an objective function to be optimized and a strategy to sample the search space).

The internship will be centered on those approaches, with a specific focus in Business Intelligence, OLAP models and Dashboard generation. A state of the art in user assistance in DataViz and BI will be done, considering the academic work but also the work done in the industry (at least three major contributors). Then, some ideas will be proposed around DataViz, user assistant, OLAP. An implementation and a prototype can be tested. A few years ago, we develop a user assistant ([www.vizassist.fr](http://www.vizassist.fr)) which model could be used as a basis.

**Candidature/contact :** please send to Gilles Venturini ([venturini@univ-tours.fr](mailto:venturini@univ-tours.fr)) your CV, a letter explaining your motivations, references from previous supervisors, your records for the last 2 years at least. A first selection of candidates will be based on these documents, then we will conduct interviews. The internship and PhD supervisors will be Pr Gilles Venturini and Pr Fatma Bouali (with possibly other colleagues from the BI4PEOPLE project).