

Interactive assistant for DataViz in Business Intelligence

Master Internship 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, from the ANR Project BI4PEOPLE (<http://eric.univ-lyon2.fr/bi4people/index-en.html>)

Duration: from March to July (can be adjusted according to your cursus requirements)

After the internship: the candidate can apply to a PhD funding on the same domain.

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 (based on expert knowledge, or user past experience) can suggest visualizations, 2) exploration assistants (history mechanisms, etc) can help users when they explore the space of visualizations, 3) optimization methods (explicit use of an objective function to be optimized) can directly suggest the best visualizations in the search space.

So, the internship will be centered on those approaches, with a specific focus in Business Intelligence and OLAP models. 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 that can be tested here (www.vizassist.fr) and which model could be used as a basis.

Candidature/contact : please send to Gilles Venturini (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 supervisors will be Pr Gilles Venturini and Pr Fatma Bouali.