SECTOR: Higher Education Institution

LOCATION: France, Grenoble

RESEARCHER PROFILE:
- First stage researcher,

INSTITUTION: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes\(^1\) enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the implementation of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL\(^*\)). The dynamic ecosystem, grounded on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from a natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is an internationally engaged university.

A personalized Welcome Center for international students, PhDs and researchers facilitates your arrival and installation.

In 2016, Univ. Grenoble Alpes was labeled «Initiative of Excellence ». This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century (“sustainable planet and society”, "health, well-being and technology", "understanding and supporting innovation: culture, technology, organizations" "Digital technology”).

* ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)

Key figures:
- 50,000 students including 7,000 international students
- 3,700 PhD students, 45% international
- 5,500 faculty members
- 180 different nationalities
- 1st city in France where it feels good to study and 5th city where it feels good to work
- ISSO: International Students & Scholars Office affiliated to EURAXESS

\(^1\) https://edu.univ-grenoble-alpes.fr/en/
MANDATORY REFERENCES:

PROJECT TITLE: MIAI @ Grenoble Alpes “Contextual Recommendations in Action - Bridging the Gap between Economics and AI” chair
SUBJECT TITLE: Economics and AI: Study the impact of advertising messages and product recommendations on people
RESEARCH FIELD: online deployment, online advertising, cognitive biases, behavioral economics, data analysis, recommendations
SCIENTIFIC DEPARTMENT (LABORATORY’S NAME): Laboratoire d’Informatique de Grenoble, GAEL-Grenoble Applied Economic Laboratory
DOCTORAL SCHOOL: Mathématiques, Sciences et technologies de l'information, Informatique (MSTII)
SUPERVISOR’S NAME: Sihem Amer-Yahia, Oana Goga, Bary Pradelski, Laurent Muller, Adélaïde Fadhuile

SUBJECT DESCRIPTION:

AI, and in particular Data Mining and Recommendation, offers the ability to observe the behavior of millions of customers and predict their future choices. While consumer choices in classical theory are based solely on preferences and on price, Behavioral Economics and in particular the study of Learning in Economics, have established that people’s behavior is largely dictated by contexts and evolves over time. Decisions are guided by heuristics influenced by psychological, emotional, cultural and social factors. The purpose of this thesis is to study how product recommendations and ad messages are influencing people by studying various behavioral economics and cognitive science theories through real-life deployments.

Online platforms such as Facebook Ads and Amazon Mechanical Turk offer the unique opportunity to study key behavioral and cognitive elements on real people at large scale. Our partnership with TOTAL offers the unique opportunity for real-life deployment through bucket testing on real customers. These two kinds of platforms allow us to approach the study from a completely new perspective compared with traditional approaches that rely on small-scale simulations and lab testing before real-life deployment. This approach also opens unique opportunities in Behavioral Economics and Econometrics and will tighten the gap between simulations and reality.

The student will be able to take advantage of a unique setting for performing this study where she/he can work with both theory and system computer scientists, as well as theoretical and experimental economists. The student will have access to a large historical dataset about products and promotions from TOTAL and will be able to take advantage of the AdAnalyst platform we developed in our team to perform controlled real-life experiments in Facebook.

The candidate will focus on solving two challenges:

(i) The design of real-world experiments that can evaluate whether and to which extent people are influenced by ad messages. The candidate will experiment with three platforms for deployment: a white lab, Facebook ads (AdAnalyst) and in situ at TOTAL. The challenge is to ensure both (1) control and (2) external validity by testing micro-level theories in the lab and the macro-level predictions in the field. The experiments can be conducted in the following scheme: recruit users (without telling them about the real purpose of the experiment), target them with contextual ads/products, and then ask them about the ads/products they saw. The deployment raises challenges such as designing data-driven sampling strategies, developing incentive schemes for customers, and account bias in recruiting.

The purpose of experiments is to test how cognitive processes affect beliefs and product adoption over time. We will test processes such as information processing (whether users actually recall seeing a given
ad/message), opinion formation (anchoring, persuasion bias), opinion dynamics as well as the effect of pricing on customers. Users will be split into two groups each of which gets to see a different version of the experiment with different contexts. For instance, one group of users will see an ad saying “Vitamin D is good for your brain ...” and another will see an ad saying “Vitamin D causes strokes...”, both groups will then be asked if they would consider buying a particular Vitamin D product.

Beside the immediate impact the candidate will also be able to study the impact of ad messages and product recommendation over time and verify the longevity of such an influence. The candidate will analyze purchasing decisions and quantify them to test if after certain ads/products there is higher demand at higher prices and studying product stickiness over time (behavioral inertia). This will allow to test persuasion bias (people “fail to account for possible repetition in the information they receive” – DeMarzo. et al 2003) and test theories of how people update their behavior.

(ii) Determine what are the human biases that are most exploitable. The cognitive processes can also be affected by meta information related to an ad: content of the message (topic, controversy, prior exposure, negative vs. positive message); trust associated with the source: does an ad coming from “Le Monde” has a higher impact than an ad coming from “The associations of people who only use red pens” or are women / men more influenced by men / women and similar questions stemming from identity economics. Also, the same ad message can have a different impact depending on the characteristics of people that see it. Using all the results the candidate will be able to devise algorithms that given a budget X, select the best targeting and structure of ads and leverage machine learning to select the best mix of ads.

The theories, methods, and results obtained in this project will not only be useful to the retail industry to make better recommendations but also to our society by understanding how advertising can be used as a weapon to change the opinion of people in a political context.

ELIGIBILITY CRITERIA
Applicants must hold a Master’s degree (or be about to earn one) or have a university degree equivalent to a European Master’s (5-year duration),

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their CV
- A short presentation of their scientific project (2 to 3 pages max)
- Letters of recommendation are welcome.

Address to send their application: firstname.lastname@univ-grenoble-alpes.fr