

# Social influences on consumption choices in university catering: a multi-agent modelling approach using GAMA

R. Bruno<sup>1</sup>, L. Canet<sup>1</sup>, C. Fleury<sup>1</sup>, B. Lemarchand<sup>1</sup>, O. Moal<sup>1</sup>, B. Neitthoffer<sup>1</sup>, C. Pichon<sup>1</sup>  
N. Darcel<sup>2</sup>, P. Taillandier<sup>3,4,5</sup>

<sup>1</sup> Université Paris-Saclay, AgroParisTech

<sup>2</sup> Université Paris-Saclay, AgroParisTech, INRAE, UMR PNCA, 75005, Paris, France

<sup>3</sup> UMI UMMISCO, IRD, Sorbonne University, Bondy, France

<sup>4</sup> JEAI WARM, Thuyloi University, Hanoi, Vietnam

<sup>5</sup> MIAT, University of Toulouse, INRAE, Castanet-Tolosan, France

nicolas.darcel@agroparistech.fr, patrick.taillandier@inrae.fr

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## Abstract

At first sight, composing a meal from dishes offered in a buffet menu is an ordinary and trivial task. However, this apparent simplicity hides a complex decision-making problem (taking into account preferences, trade-offs related to price, pleasure, variety, nutritional quality, etc.). This difficulty increases if we take into account the possible interactions between eaters. Indeed, food choices made in the presence of other eaters, such as in collective catering facilities, are the result of taking into account individual preferences as well as numerous social influences. Monitoring the evolution of choices in such contexts can be seen as studying the evolution of a complex system (many agents establishing multiple interactions with each other, thus producing a system whose evolution is difficult to predict). The objective of this project was to design and test a multi-agent system to simulate the choices of individuals choosing their dish in a university restaurant in accordance with their preferences but also under the influence of the other eaters they were brought to bump into while choosing their foods. For this simulation, we used the architecture and menus of a real university restaurant. In this model, implemented with the GAMA platform, each individual was arbitrarily assigned a preference for a certain nutritional profile for his or her own meal (ranging from poor to very high nutritional quality), this preference could be influenced by seeing other's choices. Each individual tended to conform to the choices of the other eaters they encountered. The perceived influence of an individual seen in the restaurant was variable across individuals (from poorly influential to highly influential). First experimental simulations validated that this model proposed plausible choice configurations. This represents an original approach to study the effect of social influences on the choices of individuals in a crowd situation. Future work will attempt to describe real-life situations in order to test hypotheses on how individuals integrate social influences into their food decision-making process.