10th International Conference on Statistical Implicative Analysis

http://sites.univ-lyon2.fr/asi/10/

Belfort (France) from the 2nd to the 5th of October 2019

Institut Universitaire de Technologie de Belfort-Montbéliard

19 av. du Maréchal Juin | BP 527

90016 Belfort cedex

Call for papers

The deadline is the following: May 15th, 2019

Jean-Claude Régnier, Chair of the Scientific and Programme Committee (University of Lyon – UMR 5191 ICAR – France) (National Research Tomsk State University – Sibérie – Russie)

jean-claude.regnier@univ-lyon2.fr

Régis Gras, Founder (Polytech, LS2N, Université de Nantes)

regisgra@orange.fr

Guy Brousseau, Honorary Chair (DAEST - Université Bordeaux 2)

brousseau.guy@orange.fr

Michel Henry, Co-chair of the Scientific and Programme Committee – IREM de Franche Comté

michel.henry@univ-fcomte.fr

We are pleased to invite you to attend the ASI 9 conference by submitting an oral report or in the form of a poster on one or several of the following themes:

- Fundamental concepts of SIA: statistical modelling, types of variables, principal and additional variables;
- New advances in progress, stability of indices, entropic implication intensity, extension to new types of variables, rules of exception, duality (space of subject- space of rules), metrical structure and topology of space led by their contribution to the subjects or their typicality, vector analysis, etc ...);
- Comparison of critical processes, models, representations and the results of SIA with other methods of data analysis (Galois lattices, Bayesian networks, trees induction, factorial analysis, etc ...);
- Use of the CHIC software, current and expected developments;
- Applications processed by SIA and comparison with other methods, in the areas of didactics, sciences of education, psychology, sociology, economics, art history, biology, medicine, archaeology, etc. ...;
- Graphical presentation of results and numerical applications, aid for the interpretation of these results, respective roles and critics of the types of variables, the principal variables and supplementary choices;
- Specificity of training with the SIA: use of the CHIC software, interpretation of graphical representations (implicative graph, cohesive hierarchy tree)
- Didactic issues of SIA;

The implicative statistical analysis aims to discover the shape and structure of rules, a set of data across subjects (or objects) and variables from a statistical modelling of quasi-implication: *if the variable or combination of variables **a** was observed in the population, then in general the variable **b** is observed as well.* The variables involved can be of various types: binary, modal, numeric, range, fuzzy, ... The set of rules obtained can be structured as per several complementary approaches (implicative graph, hierarchy oriented). The display of results, as well as their interpretation, is made easy with the software CHIC (trans. as Implicative and Cohesive Hierarchical Classification)

As for the previous meetings (Caen-France, São Paulo-Brazil, Palermo-Italy, Castellón-Spain, Palermo-Italy, Caen-France, São Paulo-Brazil, Radès-Tunisia, Belfort-France), during A.S.I. 10 we want to keep and encourage a scholarly, welcoming, and rigorous attitude. The Scientific Committee composed of specialists from various sources will ensure the scientific quality of the proposed work. The accepted communications will be published in the scientifically recognized *Proceedings*. With their renewal, they will prolong the recently published works:

[1.] R. Gras, E. Suzuki, F. Guillet and F. Spagnolo, (Eds) (2008) *Statistical Implicative Analysis*, , Springer-Verlag, Berlin-Heidelberg

[2.] Gras R., Régnier J.-C., Guillet F. (Eds) (2009) *Analyse Statistique Implicative. Une méthode d'analyse de données pour la recherche de causalités*. Cépaduès Ed. Toulouse

[3.] Orus, P., Zamora, L., Gregori, P. (2009) *Teoria y Aplicaciones del Analisis Estadistico Implicativo:* Universitat Jaume-1, Castellon (Espagne)

[4.] Régnier J.C., Gras R., Spagnolo F., Di Paola B. (Eds) (2011) *Analyse Statistique Implicative, Objet de recherche et de formation en analyse des données, outil pour la recherche multidisciplinaire, Prolongement des débat*s. ISSN on-line 1592-4424, Palerme: Université de Palerme.

[5.] Régnier J.C., Bailleul, M., Gras R.(Eds) (2012) *Analyse Statistique Implicative: de l'exploratoire au confirmatoire*. ISBN 978-2-7466-5256-9 Caen : IUFM de l'Université de Caen.

[6.] Gras R., Régnier J.-C., Marinica, C., Guillet F. (Eds) (2013) *Analyse Statistique Implicative. Méthode exploratoire et confirmatoire à la recherche de causalités*. Toulouse: Cépaduès Editions

[7.] Régnier J.C., Ag Almouloud, S., Gras R. (Eds) (2013) *Analyse Statistique Implicative. Cadre théorique et applicatif pour l'exploration sémantique et non symétrique des données*. São Paulo : PUC/PPGEM

[8.] Régnier, J.C., Slimani, Y., Gras, R., Ben Tarbout, I., Dhouibi, A. (Eds) (2015). *Analyse statistique implicative. Des sciences dures aux sciences humaines et sociales*. Tunisie. ARSA Association pour la Recherche en Statistique Appliquée ISBN 978-9973-9819-0-5. (1ère édition) - ISSN on-line 1592-4424 - QRDM - QUADERNI DI RICERCA IN DIDATTICA - G.R.I.M. Supplemento n.1 al N.25- PALERMO 2015 (2ème édition)

[9.] Gras, R., Régnier, JC., Lahanier-Reuter, D. Marinica, C., Guillet, F. (Eds) (2017) *Analyse Statistique Implicative. Des Sciences dures aux Sciences Humaines et Sociales*. Toulouse : Cépadues

[10.] Régnier, J.C., Gras, R., Couturier, R., Bodin, A. (Eds) (2017). *Analyse statistique implicative. Points de vue conceptuels, applicatifs et métaphoriques*. France: Université de Bourgogne-Franche Comté.

[11.] Gras, R., (2018) *La théorie de l'analyse statistique implicative ou l'invraisemblance du faux*. Toulouse : Cépadues

In A.S.I. 10, we also launch nine challenges:

1 ° Implicative cone: how to qualify and quantify the global qualities of the father variables, and also the son variables, in relation to the top of the implicative cone. Identify the most coherent liaisons via the top of the cone.

2 ° We have a network of curves from an implicative graph originating from A. This graph represents a dynamic character of which the curves are weighted by rule-abiding occurrences. It might be possible to create a mechanic metaphor illustrating such a graph.

3 ° Enrich the extension to continuous variables by authentic examples, then treat and analyse them.

4 ° Do a double analysis of a file with binary data, one-part implicative analysis and the other using Bayesian-style data.

5 ° The research and treatment of the internal degree of homogeneity/heterogeneity of a general population presenting a general sequencing of data compatible with an implicative and particularly cohesive structure

6 ° Establishing variable A and the consequences B, C and D, and knowing that A = >B, A = >C, and A = >D, is it possible to define an implication for A on the conjunction of B, C, or D- meaning A = > (B and C and D) ?

7 ° Establish how the logic that is underlying SIA, the implicative statistical logic (ISL), where we control contradictions under a certain dialectic, is a paraconsistent logic.

8 ° The cohesive hierarchy seems to be a metaphor of the cognitive development of humans. Could it not also be a metaphor of Darwinian evolution?

9 ° Define for a given analysis the notion of density of the group of implicative relations (rules). Study it in terms of the retained threshold (ex. 0.95, 0.8 etc.) et qualify the compacity of an implicative graph by a relation between the number of represented rules and the threshold. This study invokes the notion of fractal dimensions of a curve.

Submission: submitted papers should be between 15 and 30 pages in a format conforming to the template on the website:

http://sites.univ-lyon2.fr/asi/10/format/ASI10_2019_Word.docx

We have already specified that the text should be in Times New Roman 12, spacing 1.0 and on the first page, you must include the title of the paper, the name (s), affiliation (s) of author (s) and e-mail of each author, an abstract (in French and English) of maximum 500 words each. If the text is in Italian, Spanish or Portuguese, it will also require a summary in the respective language.

Proposals for posters will be prepared on a page listing the title, the name (s), affiliation (s) of author (s), address and email of each author, not exiting the limit of 500 words in Times New Roman 12, spacing 1.5.

The **poster** should follow a format as defined in the following web address:

http://sites.univ-lyon2.fr/asi/10/?page=poster&lang=en

Language:

Five languages are accepted for the oral report: English, Spanish, French, Italian or Portuguese. However, the slide presentation used for the oral report must be written in French, Portuguese or English.

Sending proposals in .Doc or Docx and .PDF

The texts will be sent in either Word.docx and PDF formats at the URL mentioned at:

http://sites.univ-lyon2.fr/asi/10/

before **May 15th, 2019** to be submitted anonymously to the Scientific Committee (3 reviewers by papers).

Name file: ASI10_*firstauthorname*.doc and ASI10_*firstauthorname*.pdf