
Contents

Introduction

Régis Gras, Einoshin Suzuki, Fabrice Guillet, Filippo Spagnolo 1

Part I Methodology and concepts for SIA

An overview of the Statistical Implicative Analysis (SIA) development

Régis Gras, Pascale Kuntz 11

CHIC:Cohesive Hierarchical Implicative Classification

Raphaël Couturier 41

Assessing the interestingness of temporal rules with Sequential Implication Intensity

Julien Blanchard, Fabrice Guillet, Régis Gras 55

Part II Application to concept learning in education, teaching, and didactics

Student's Algebraic Knowledge Modelling: Algebraic Context as Cause of Student's Actions

Marie-Caroline Croset, Jana Trgalova, Jean-François Nicaud 75

The graphic illusion of high school students

Eduardo Lacasta, Miguel R. Wilhelmi 99

Implicative networks of student's *representations* of Physical Activities

Catherine-Marie Chiocca, Ingrid Verschure 119

**A comparison between the hierarchical clustering of variables,
implicative statistical analysis and confirmatory factor
analysis**

Iliada Elia, Athanasios Gagatsis 131

**Implications between learning outcomes in elementary
bayesian inference**

Carmen Díaz, Inmaculada de la Fuente, Carmen Batanero 163

**Personal Geometrical Working Space: a Didactic
and Statistical Approach**

Alain Kuzniak 185

**Part III A methodological answer in various application
frameworks**

Statistical Implicative Analysis of DNA microarrays

Gerard Ramstein 205

**On the use of Implication Intensity for matching ontologies
and textual taxonomies**

Jérôme David, Fabrice Guillet, Henri Briand, Régis Gras 227

Modelling by Statistic in Research of Mathematics Education

Elsa Malisani and Aldo Scimone and Filippo Spagnolo 247

Didactics of Mathematics and Implicative Statistical Analysis

Dominique Lahanier-Reuter 277

**Using the Statistical Implicative Analysis for Elaborating
Behavioral Referentials**

*Stéphane Daviet, Fabrice Guillet, Henri Briand, Serge Baquedano,
Vincent Philippé, Régis Gras* 299

Fictitious Pupils and Implicative Analysis: a Case Study

Pilar Orús, Pablo Gregori 321

**Identifying didactic and sociocultural obstacles
to conceptualization through Statistical Implicative Analysis**

Nadja Maria Acioly-Régnier, Jean-Claude Régnier 347

Part IV Extensions to rule interestingness in data mining

**Pitfalls for Categorizations of Objective Interestingness
Measures for Rule Discovery**

Einoshin Suzuki 383

Inducing and Evaluating Classification Trees with Statistical Implicative Criteria	
<i>Gilbert Ritschard, Vincent Pisetta, Djamel A. Zighed</i>	397
On the behavior of the generalizations of the intensity of implication: A data-driven comparative study	
<i>Benoît Vaillant, Stéphane Lallich, Philippe Lenca</i>	421
The <i>TVpercent</i> principle for the counterexamples statistic	
<i>Ricco Rakotomalala, Alain Morineau</i>	449
User-System Interaction for Redundancy-Free Knowledge Discovery in Data	
<i>Rémi Lehn, Henri Briand, Fabrice Guillet</i>	463
Fuzzy Knowledge Discovery Based on Statistical Implication	
Indexes	
<i>Maurice Bernadet</i>	481
About the editors	507
Index	509