

Special issue

Selected Papers from the FISC Conference at Kettering University June 24–28, 2014, Michigan, USA

This special issue of the *Serdica Journal of Computing* (FISC, June 24–28, 2014 Proceedings) contains part of the presented and refereed articles discussed at the Flint International Conference on Statistics (FISC), held at Kettering University in Flint, Michigan, in June 24–28, 2014. This International event was really unique for Kettering and for the institutions in this city. More than 40 participants gathered at FISC. There were participants from Sweden, France, Germany, Moldavia, Bulgaria, Italy, United Kingdom, Spain, South Africa, Canada, Cyprus, Barbados, Georgia, Moldova, USA. The title of the conference “Flint, One City, One Year Under Variability” was challenging. It serves as a hint that this conference is on *statistical methods and studies of historical data*. We saw many challenging problems in studies on data sets containing multiple parallel series of historical data on various things in the areas of public life, industrial and service development. And historical data are presented by huge worldwide arrays of *big data* that require not just specific statistical methods for excerpction of useful information and learning, but also development of specific tools for data mining and reducing the dimension of the data sets. Hence, many of the existing questions naturally led to further questions on the edge between Computer Science and Statistical approaches in data manipulations. And as a result, the FISC enjoyed discussions important for the whole spectrum of interest, from algorithmic and numeric to modeling and traditional analytic and practically valued studies of specific problems.

At the end of the day, we collected 22 well written articles from those participants, who decided to publish in our journal’s *Special Proceedings of FISC* issue. As organizers and editors of the FISC Proceedings, we split the articles in two parts. The articles closed to Computer Science topics are directed to the *Serdica Journal of Computing* (published by the Bulgarian Academy of Sciences), while those with more theoretical and specific statistical orientation go to the journal *Economics, Quality, Control* (EQC), published simultaneously by De Gruyters in Germany.

This special issue of *Serdica Journal of Computing* contains 12 articles presented at FISC, then several months later prepared by the authors as publishable artwork which passed the scrutiny of a peer review process, and offered now to the judgment of readers. We are proud to present:

- **Five Turning Points in the Historical Progress of Statistics – My Personal Vision**, by E. von Collani, Wuerzburg, Germany

Elart von Collani was a special guest, closing Keynote speaker. He prepared his historical study on why Statistics penetrated almost all branches of science and all areas of human endeavor. He discusses reasons for statistics being misunderstood, misused and abused to a frightening extent, and often disliked by students in colleges and universities. His article addresses the historical development of statistics, aiming the identification of the most important turning points that led to the present prestigious state of statistics. There are many other challenging questions, like “What went wrong with statistics?”, and “What to do next?”.

- **Teaching of Statistics for Engineers: Learning from Experiential Data**, by V. Mandrekar, Michigan State University, USA

The invited speaker, Prof. Mandrekar has long years of service as Departmental head of Statistics at MSU. He briefly expresses his vision of why and how Statistics should be taught at the universities in the light of use of contemporary technology.

- **Seeking Relationships in Big Data: A Bayesian Perspective**, Nozer D. Singpurwalla, The City University of Hong Kong, Hong Kong (and Washington University at DC in US)

- **A Taxonomy of Big Data for Optimal Predictive Machine Learning and Data Mining**, Ernest Fokoué, Rochester Institute of Technology NY, USA.

A Comparative Analysis of Predictive Learning Algorithms on High-Dimensional Microarray Cancer Data, Jo Bill, Ernest Fokoué, Rochester Institute of Technology NY, USA.

- **Accent Recognition for Noisy Audio Signals**, Zichen Ma, Ernest Fokoué, Rochester Institute of Technology NY, USA .

- **Data Mining for Software Development Life Cycle Quality Management**, G. Novakova, Sofia University, Bulgaria.

These five articles deal with the contemporary problems of computational, analytical, philosophical and practical work with Big Data, Data Mining, and E-learning. We do not intend to disclose all details, but you will enjoy the novelties in all the articles, presented by masters in this art of the science. Singpurwalla and Fokoué were invited Keynote speakers.

- **Dependence Structure of Some Bivariate Distributions**, B. Dimitrov, Kettering University, USA.

This article is on the border of the arts of statistics and computer graphics.

The author published his ideas on how to study local inner dependence between random events in *Transactions of the Bulg. Acad. of Sci.* and wants the continuation to be held there. He develops the idea of an algorithm for calculation of local dependence between random variables, and demonstrates it on particular examples. The talk was used as a Tutoring Lecture at FISC.

- **On the L_p -norm Regression Models for Estimating Value-at-Risk**, by P. Kumar, U. of Northern BC, and F. Kashanchi Northern Health BC, Canada.

L_p -norms are a well-known approach used in numerical mathematics. The authors show that it can also be used in Regression Analysis with an excellent illustration of its use in financial risk analysis. This is like a switch from the previous topics to the area of statistics and probability.

- **The Methodology of the Subsistence Minimum Calculation for Developing Countries and Its Computation on the Georgian Example**, by I. Makalatia, K. Krialashvili, R. Gerliani, Tbilisi State University, Georgia.

This is another example of how information technology, information content, logic and algorithmic thinking may help governing bodies to get useful information for the benefit of their people and themselves.

- **Generalized Priority Systems. Analytical Results and Numerical Algorithms**, by G. Mishkoy, Academy of Sciences of Moldova, Moldova.
- **On the Busy Period in One Finite Queue of M/G/1 Type with Inactive Orbit**, by V. Dragieva, Sofia University of Forestry, Bulgaria.

These last two articles are directed to information flow network modeling with specific features. Both authors are renowned experts in the field, and we are proud to offer their latest results, especially as they have a direct effect on CS applications.

We hope that this special issue will be very useful for many scientists working in the fields touched by the authors. We would like to express our sincere thanks to all authors and reviewers who made this publication real.

Special thanks are also due to the Editorial staff of *Serdica Journal of Computing* for editing and assembling this issue.

Leszek Gawarecki and Boyan Dimitrov
FISC Organizers and Special Guest Editors

Without comments we decided to include this reflection on the Flint International Statistics Conference 2014:

My name is Ernest Fokoué. I am an Associate Professor of Statistics at Rochester Institute of Technology. I was very fortunate to be invited by Professor Boyan Dimitrov to the Flint International Statistics Conference 2014. Under the dynamic leadership of Professor Dimitrov, the conference committee offered all the participants a unique and memorable intellectual and social experience. The conference committee masterfully achieved a balanced scientific schedule with applications, computation, methodology and theory all equally represented. Besides, by avoiding parallel sessions and sticking with one single session at a time, not only did participants get to spend more time together and network, but also each person had the tremendous opportunity/privilege of learning a vast array of statistical concepts for peers without the pressure of having run from one session to another and debating which session to choose. The variety of topics covered also greatly enhanced and enriched the scientific/intellectual experience of the participants as we all had the opportunity to be introduced to many facets and applications of statistics. As delightful and delicious icing on the cake the social events were carefully chosen and schedule in such a way that participants had manifold opportunities to get to know one and another initiate new research partnerships and friendships. As a matter of fact, my graduate students - the ones who came with me to the conference to present their research - made new friends and research collaborators with whom we are actively collaborating right now.

Last, but definitely not least, Prof Dimitrov and his entire conference committee did a masterful job at making the conference truly international thereby confirming the universal nature of statistical science. It was quite amazing to have participants from the United States, France, Russia, Italy, Moldova, Bulgaria, China, India, Romania, Germany, Sweden, Poland, just to name a few, sharing a diverse menu of statistical topics. It is my humble opinion that the Flint International Statistics Conference was a resounding success and that the initiative should be supported in coming years.

Ernest Fokoué,
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