

# INTRODUCTION TO THE ISSUE

## PERSPECTIVES MAGAZINE

Welcome to the third issue of *Perspectives* magazine. We hope that you enjoy the diversity of articles in this issue. The diversity is, of course, intentional! A few highlights...

The issue features an interview with Prof. Tracey Lauriault of Carleton University. It is a follow-on to her plenary presentation at FUSION 2019 in Ottawa, and it was conducted by two *Perspectives* Associate Editors, Wolfgang Koch and Anne-Laure Joussemme. The interview is a first for *Perspectives* and the International Society of Information Fusion (ISIF). It is of special interest because it discusses the increasingly important *societal impact of data fusion technologies* in the context of “Smart Cities”. The full transcript can be found on the ISIF website.

The feature article “Autonomy Challenges for the Next Generation of Mars Rovers” is a report on an ambitious prize-winning, student-led UK project for the design of an autonomous scooping mechanism for the European Rover Challenge, currently the biggest space robotics event in Europe. *Perspectives* magazine is always open to reports on exceptional student-led projects such as this one.

Statistics has long taught—quite correctly—that correlation is not to be confused with causality (or cause and effect). Consequently, causality is often deemed inaccessible to statistical methods. The distinguished Prof. Judea Pearl, however, has long argued otherwise in a series of books. His most recent book *Causal Inference in Statistics, A Primer* is reviewed here. The review by Dr. Lawrence Stone is unusual by design, as the request was for him to introduce the subject before actually reviewing the book. The result is a stimulating read. A supplemental response to the review was written by Dr. Alfonso Farina and provides still more perspective.

The issue includes a report on the highly successful FUSION Conference in Ottawa in 2019. The shortlisted papers for Best Paper and Best Student Paper awards are listed, and the abstracts of the winning papers are included here. Reports from several workshops sponsored in part by ISIF that were held throughout the past year are also given. A report on the first ever Maritime Situational Awareness Workshop (MSAW) in the incomparably beautiful Lerici, Italy on the Italian Riviera is included because of its relevance to the data fusion community.

This issue is possible only by the timely and thoughtful contributions of the authors, reviewers, and editors. A special thanks goes to Kristy Virostek, our Production Manager, who somehow knows how to keep us all on schedule. (The EiC needs more help than most.) Thank you all for your generous help with this issue.



**Roy Streit**  
Editor-in-Chief

## POSTSCRIPT

I wrote the Introduction in early March. Since then, personal perspectives (pun intended) about what is important in our lives and the best direction of our work are shifting for many of us. It will take time for each of us to sort these things out to find a new normal.

Personal choices and instincts drive many of us working in Information Fusion to seek quantitative models of the world. Consequently, in this New World of the last few months, two areas of research will naturally beckon for our attention in the coming days and months.

One area is the mathematical modeling of the spread of infectious diseases. This kind of work began in the 1920s with differential equation “compartmental” models of the numbers of Susceptible/Infectious/Recovered (SIR) individuals. The models are nowadays both extended (SEIR and SEIRS) and more sophisticated (stochastic models), as well as data adaptive [1]. The senior author (Vincent Poor) was a Plenary Speaker at Fusion 2002 in Annapolis, MD.

The other area concerns spatial-temporal data modeling. With the abundance of multisource data, these models can be both dynamical and stochastic. Several fairly recent books are devoted to this increasingly important area. Both areas fit within the realm of Information Fusion, and both will influence us—individually and as an Information Fusion Society—in the coming days.

My thoughts and best wishes go out to every member of the Fusion community, their families and friends, their countries, and to all.

## REFERENCE

1. Etleby, R., Zhuang, Y., Carley, K. M., Yağan, K. M., and Poor, H. V. The effects of evolutionary adaptations on spreading processes in complex networks. *Proc. National Academy of Sciences*, Vol. 177, 11 (2000), 5664–5670.