New Developments in Computational Intelligence and Computer Science

- Proceedings of the International Conference on Applied Physics, Simulation and Computers (APSAC 2015)
- Proceedings of the International Conference on Neural Networks - Fuzzy Systems (NN-FS 2015)

Vienna, Austria, March 15-17, 2015

Edited by

Yingxu Wang
Pierre Borne
Imre Rudas

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Keynote Lecture

Highlights of Modern Astrophysics, or The Gold Effect: How reliable is Modern Astrophysics?

Professor Wolfgang Kundt
Argelander Institut für Astronomie, Bonn
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Abstract: Our modern civilisation, on Earth, owes its existence and comfort to three kinds of machines:
(1) 'Manmade' machines, which produce (~millions of identical) cars, trains, airplanes, rockets, guns, bombs, smart phones, ipads, and of further useful equipment, which help us control our environment;
(2) 'Biological', or 'organic' machines, which produce (~millions of almost identical) living creatures, with all their senses for orientation, motion, action, and for housekeeping their bodies - steered by their DNA - and involving lenses, ears, thermostats, and all sorts of further organs acting like physical hardware; and:
(3) 'Inorganic' machines, which have been at work since the origin of the Universe - long before the existence of life - which provided stars, planets, moons, magnetic fields, accretion disks, stellar winds, nova and supernova explosions, and all the astrophysical twin-jets, also the cosmic rays, and the gamma-ray bursts. They are not always well understood.
Whereas all the manmade machines are well understood (by their constructors), and perform reliably, having been multiply tested, and all the organic machines often perform even better, and more reliably - having survived on Earth for millions, or even billions of years - the inorganic machines have often caused "conumbra" to their detectors, and have often found wrong explanations in the literature, suffering from the Gold effect: because they could not be tested. They were equally relevant for the existence of life. I will present various examples of the latter.

Brief Biography of the Speaker: Born in Hamburg in 1931; High School in Dresden and Hamburg; University Career in Hamburg: Diploma (1956), Ph.D. (1959), Habilitation (1965), all with Pasual Jordan in Theoretical Physics, centered on General Relativity.
Lectures in: Kiel, Hamburg, Geneva (CERN), Bielefeld, Bonn.
Extended Visits of: Pittsburgh (Pa), Cambridge (England), Kyoto, Bangalore, Boston, Linz, Maribor.
Organisation of 15 international Conferences in Europe.
Publication: of more than 280 articles, and 9 books on fundamental physics, including quantisation, astrophysics, geophysics, and biophysics, among them: "Astrophysics, A new Approach", Springer 2004, and "Physikalische Mythen auf dem Pruefstand", with Ole Marggraf, Springer 2014.

Scientific friends: Erich Bagge, Felix Pirani, Werner Israel, Thomas Gold, Hermann Bondi, Rolf Hagedorn, John Archibald Wheeler, Antonino Zichichi, Werner Buckel, Peter Scheuer, Rajaram Nityananda, David Layzer.
Frequent disagreements with mainstream opinions: More than 135 'alternatives' can be found in my publications, including my books.

Plenary Lecture

Data Compression: Learning and Clustering

Professor Bruno Carpentieri
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Universita di Salerno
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Abstract: Data Compression is generally motivated by the economic and logistic needs to save space in storage media and to save bandwidth in communication. Today we know that data compression, clustering, data classification, learning and data mining are all facets of the same multidimensional coin and that the data compression process is strictly bound to efficient clustering and learning. In this talk we will review some of the recent advances in the field and we will exploit the relationship between compression, learning and clustering.

Brief Biography of the Speaker: Bruno Carpentieri received the “Laurea” degree in Computer Science from the University of Salerno, Salerno, Italy, and the M.A. and Ph.D. degrees in Computer Science from the Brandeis University, Waltham, MA, U.S.A.
Since 1991, he has been first Assistant Professor and then Associate Professor of Computer Science at the University of Salerno (Italy). His research interests include lossless and lossy image compression, video compression and motion estimation, information hiding. He has been for many years Associate editor of the journal IEEE Trans. on Image Processing. He was chair and organizer of the International Conference on Data Compression, Communication and Processing 2011, co-chair of the International Conference on Compression and Complexity of Sequences, and, for many years, program committee member of the IEEE Data Compression Conference. He has been responsible for various European Commission contracts regarding image and video compression and digital movies.