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Geometric data analysis: Analytics of processes and behaviors

Geometric data analysis allows for “letting the data speak” and integrates qualitative and quantitative analytics. Scope and potential are major in many fields. Case studies here are large scale social media analytics, related to an area of social practice and an area of health and well-being. The interesting survey of Keiding and Louis, “Perils and potentials of self-selected entry to epidemiological studies and surveys” points to very interesting issues in big data analytics. My contribution is in the discussion part of this paper. Through the geometry and topology of data and information, with inclusion of context, of chronology and of frame-models, we are addressing such issues of sampling and representativity. The case studies to be discussed in this presentation are related to mental health and to social entertainment events and contexts in the latter case with many millions of Twitter tweets, using many languages. Particular consideration is given to use and implementation of our analytical perspectives. This includes determining the information content of our data clouds, and of mapping onto Euclidean-distance endowed semantic factor spaces, as well as the ultrametric or hierarchical topology, that is characteristic of all forms of complex systems.

Biography

Fionn Murtagh is Professor of Data Science and previously he was into Big Data in Education, Astrophysics and Cosmology. He was the Director of National Research Funding across many domains including Computing & Engineering, Energy, Nanotechnology and Photonics. He has been the Professor of Computer Science, including Head of Department, and Head of School at many universities. He was the Editor-in-Chief of the *Computer Journal* for more than 10 years, and is a Member of the Editorial Boards of many other journals.

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