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Health and medical analytics, through analytical focus and contextualization, with new challenges and opportunities in the context of big data

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The first chapter of Zhang et al. (2018) on "Big data and clinical research: perspectives from a clinician" by Zhongheng Zhang, counterposes, as research, interventional analysis, which is, in fact, experimental research, relative to observational studies. For the former, typically at issue are randomized controlled trials. Also for the former, selection is required but then there might be bias associated with what is done. An important point made is that patients' treatments are usually complicated by one or more other diseases or disorders that a patient may have. So it becomes so very important to have and to use ancillary and contextual observations also. This amounts to the practical setting for big data clinical trials. Electronic medical records can be very important. Such big data may very well include also, demographic attributes, microbiology information on the patient, and other data sources. So it is noted that such observational data, encompassing what amounts to big data clinical trials, can be very relevant to the "real-world", i.e. detailed and comprehensive information on the patient. An important release of a "data sharing platform for population and health" in China in 2017 is noted as "historic leap in clinical research". Allin and Hand (2017) discuss data sources for national health services, and the importance of Big Data to address bias of self-selected, social media or other data sources. In Murtagh and Farid (2017), it is described how analytical focus and ancillary and contextual information sources are to be well associated or well combined.

Biography

Fionn Murtagh is the Professor of Data Science. His degrees in Mathematics, Engineering and Computer Science are from Trinity College Dublin, Ireland, and PhD in Mathematical Statistics, with Jean-Paul Benzécri, Université Pierre et Marie Curie, Paris 6, France. He is an editorial board member of many journals, and a Fellow and elected member of many societies, Royal Irish Academy, Academia Europaea, Intl. Assoc. of Pattern Recognition, Royal Statistical Society, British Computer Society, Institute of Mathematics and Its Applications, Royal Society of Arts; Senior Fellow Higher Education Academy, Senior Member IEEE. He has published more than 350 papers and has been author or editor of 27 books.

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