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The T-pattern and structural and functional self-similarity from human and neuronal interactions to DNA

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A proposed discrete real-scale hierarchical repeated pattern type called T-pattern has been found in many kinds of verbal and non-verbal human, animal and neuronal behavior and interactions and seems characteristic of DNA patterns such as exons and genes. Functional analogies also seem to exist. Such structural self-similarity over a number of levels of biological organization suggests the possibility of a unified mathematical, bioinformatics and system biological approach. The T-pattern, a synchronic and sequential hierarchical pattern of patterns etc with statistically significant constraints on the distances between its components over its occurrences that is having approximate translation symmetry is described together with its extensions called T-system and a special purpose detection software, THEME. T-patterns may be seen as a particular kind of statistical pseudo-fractal objects on one dimension but extendable to n dimensions. Illustrative results with statistical (Monte Carlo) and external validation from human and neuronal interactions are presented and compared with the structure of exons, genes and chromosomes.

Biography

Magnus S Magnusson is a research professor, completed his PhD in 1983 from the University of Copenhagen. He has created the T-pattern model and detection algorithms implemented in THEME. He has focused on real-time organization of behavior, co-directed a two-year DNA analysis project, published numerous papers and given invited talks at numerous conferences (including AIMS and IFNA) and universities in Europe, USA and Japan. He was a Deputy Director from 1983-1988, Anthropology Laboratory, Museum of Natural History, Paris. He was a temporary professor at the University of Paris. Since 1991, he is a Founder, Director of the Human Behavior Laboratory, University of Iceland. Since 1995, he is in collaboration between 24 universities based on "Magnusson's analytical model" initiated at the Sorbonne, Paris.

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