Visualizing the Many Spaces of Health

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The relevance of spatial thinking and geographic techniques for the medical domain extends far beyond the traditional bounds of using GIS and spatial analysis to investigate public health phenomena in geographic space. With some imagination, medical concepts and practices can be seen as simultaneously existing in a multitude of different spaces. Once such an overarching spatial viewpoint is in place, health data can be transformed into engaging artifacts that support medical research, education, and practice. For example, medical records generated by intensive care units could be turned into nuanced representations of patients' health status. The written notes of medical professionals – from surgeons to nurses and radiologists – can be a rich source of insight, not only with respect to individual patients, but in surveying and monitoring the medical ecosystem. Meanwhile, natural language processing and machine learning can be used to organize biomedical research results into coherent knowledge structures. The presentation will highlight three projects that exemplify a spatial approach to health informatics. These involve diverse data sources, namely (1) a corpus of two million biomedical research articles, (2) detailed clinical records for more than 10,000 ICU patients, and (3) a multi-year registry of several thousand heart attack patients.

Bio

Dr. André Skupin is a Professor of Geography and Co-Director of the Center for Information Convergence and Strategy (CICS) at San Diego State University. He is also an Associate Director of the Center for Data Analytics and Intelligence (CENDAI) at the Czech University of Life Sciences in Prague and co-founder of a startup company aimed at turning several patent-pending text mining and knowledge engineering technologies into commercial products. Dr. Skupin combines a classic cartographic education and 25+ years of experience in the geographic information systems market with long-standing interests in visualization and spatio-temporal modeling. He has developed novel methods for analyzing human mobility and social and environmental processes and has been a thought leader in knowledge visualization, where he has integrated disparate strands from natural language processing, machine learning, and cartography. He has a strong interest in accelerated transition of technological innovation into diverse application areas, from biomedicine to finance, business management, and environmental monitoring.