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Autor	IRON PRANDO DA SILVA
Orientador	JOAO LUIZ DIHL COMBA

AN ANIMATED VISUAL ENCODING FOR STABILITY EVALUATION OF PROJECTION TECHNIQUES IN TIME-VARYING HIGH-DIMENSIONAL DATA.

Iron Prando da Silva, Eduardo F. Vernier, Rafael Garcia, João Luiz Dihl Comba (advisor). Universidade Federal do Rio Grande do Sul.

In the modern world, data has taken increasing importance in businesses, and its growing complexity and volume ask for better and more refined algorithms of analysis and exploration. Assessment tools come in handy for those who need to evaluate the quality of their results, primarily to those whose activities rely on high precision decision making and support. In this work, we consider the challenging analysis of time-varying high-dimensional datasets. Projection techniques are often used to create 2D representations of these high-dimensional datasets, but the study of projections for time-varying scenarios is not well studied. We present a visual encoding to express the results of multi-dimensional projection techniques for time-varying data. We compare four projection techniques and three datasets. Preliminary results proved satisfactory, evidentiating instabilities of the evaluated techniques and thus enabling a more robust visual comparison between them. As a side result, the proposed encoding also favors the tracking of element positions in 2D space between frame transitions, potentializing the observer's perception of the data as it evolves through time.