

ABSTRACT OF THE DISCLOSURE

Application No.: 63/983,234 (Continuation-in-Part)

METHODS AND SYSTEMS FOR STRUCTURAL INTERFEROMETRY OF INFORMATION SYSTEMS VIA PRINCIPAL COMPONENT ABLATION AND ALGEBRAIC LATTICE DECOMPOSITION

Inventor: James D. Branton

A method for structural interferometry of internally coherent information systems via principal component ablation and algebraic lattice decomposition. The method employs an algebraic lattice as an extrinsic reference frame, enabling measurement of information dynamics that are otherwise intrinsic and unobservable from within the system's dominant variance direction. The method discovers that structural information and distributional information in the vector representations produced by such systems occupy orthogonal subspaces separable by principal component analysis. Structural information resides in intermediate principal components (PCs 2--50, the "penumbral subspace"), while the first principal component carries zero structural information and actively degrades structural classification when included. The method is validated across eleven encoder architectures spanning five training paradigms and four computational mechanisms (bidirectional self-attention, permutation self-attention, causal self-attention, and gated linear recurrence), multiple natural languages, baroque music audio, and a combinatorial symbol system (the Voynich Manuscript). A multi-encoder convergence criterion establishes that structural inference requires agreement across independent encoders, filtering encoder-specific geometric artifacts demonstrated on both language and music substrates. Three substrates exhibit convergent Ising block coupling structure with ratios in the range 4.9--6.3x. The method enables automated structural coherence evaluation of structured input in domains including legal, medical, financial, scientific, musical, and cryptographic applications.