1135-AH-3166 **Gabriel A Silva*** (gsilva@ucsd.edu), Department of Bioengineering, University of California San Diego, 9500 Gilman Drive, MC0412, La Jolla, CA 92093-0412. *Inference of actualized subsets of geometric association graphs based on context and a neural derive dynamic competition model.*

We have developed a generalized neural derived framework capable of mining contextual geometric association graphs in unique ways. 'Contextual' and 'associative' in that the input data being learned and the connections between data elements reflect semantic and situational relationships organized on a temporal dynamics.'Geometric' in that the adjacency matrices are not binary but weighted by a distance metric that reflects a computed 'closeness' between data elements. Our methods allow us to carry out contextual dynamic inference on such graphs. An association graph encodes every possible and realizable connection between different learned data elements, along with a measure of the probability or strength of the interactions between them. Call this the total solution space. However, at any given moment, how such a graph is actually used, how subsets of the total solution space are called upon and actualized in response to a contextual demand external to the system, will vary over time dependent on the context and situation. We show we can efficiently compute the subset of associations that form functional paths using a neural derived competitive refractory model that computes how the timing of signals propagating on the graph compete to 'activate' vertices they connect into. (Received September 26, 2017)