

1067-62-1418

**Galen I Papkov\*** (gpapkov@fgcu.edu), 10501 FGCU Blvd South, Dept. of Chemistry and Mathematics, Fort Myers, FL 33965. *Increased Adaptivity in Smoothed Polynomial Histograms with Application to Massive and Pre-Binned Datasets.*

Smoothed polynomial histograms attain their computational efficiency by generating nonparametric density estimators that attempt to match bin moments. This work improves upon the smoothed polynomial histogram via quadratic programming with a roughness penalty and inequality constraints corresponding to confidence intervals for the local sample moments. The use of confidence intervals provides increased adaptivity. In addition to density estimation, applications exist in physics in the form of pre-binned data, massive data sets such as internet traffic, and census-type data. Future work will explore the effects of adaptive knot selection and higher-order derivatives in the penalty on the quality of the density estimate. (Received September 20, 2010)