

Automating Resource Estimation Parameters: A case study evaluating preferred paths for optimization

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ABSTRACT:

Optimizing resource estimation parameters is a challenging venture, with all uncertainty of the geological parameters present, skewness of sample datasets and effect of nested structures. Local Kriging Neighborhood Optimization (LKNO) is a recently developed optimization method, provides opportunity to automate kriging parameter selection and test pathways to speed up scenario sensitivity analyses.

This paper provides an applied evaluation of the LKNO process, and the impact this could have when technology advances to automating resources estimation. The case study presented is a real application to a project that lies at the central section of the Egyptian eastern desert.

Following a summary of the geological context, the data analysis and variography analysis, the paper outlines the LKNO process as a method to automate estimation parameter selection. The results and subsequent analyses of the LKNO sensitivities as they relate to both the geological context and the controlling parameters offers opportunity to develop an estimation quality benchmarking process that can inform automation of the resource estimation process.

The paper includes an assessment of the results against the typical parameters selected for resource estimation, thereby adding our industry's benchmarking in assessing validity and efficacy of estimation parameters, and providing a pathway to further automation of the resource estimation process.