JCGS-20-156 AE Review

Overall evaluation

This paper proposes a new form of projection pursuit methods to find interesting views of a multidimensional dataset based on sections in data space rather than just linear projections. There are several interesting and possibly novel ideas here:

- Comparing data densities inside vs. outside a section to find “holes” (low density) and “grains” (high density).
- The idea of binning the data in polar coordinates, called “radial binning”.
- A generalized index for section pursuit.

Although generally well-written, one reviewer (R2) complains strongly that the mathematical exposition, notation, and some nomenclature need revision and suggests a re-organization of the structure toward greater clarity. I am sympathetic to these views.

This paper is certainly of sufficient interest to JCGS readers but needs another pass to make it publishable. I am torn between revise-resubmit and reject-with-encouragement, but will go with the former.

General comments

Reviewer R1 generally likes the paper, but complains that it is too dependent on Laa, Cook & Valencia 2019. Makes a number of other suggestions I think are worth addressing. I too would like to see a conceptual sketch illustrating sections & binning.

Reviewer R2 has written an extremely detailed report that must be responded to. Among the points I find compelling are:

- Consider reorganization along the lines suggested
- Cleanup notation and terminology (slice vs. section)
- Include some mention in Discussion of possible weaknesses of method (e.g., cases where it might be useless) and/or suggestions for future development.

Specific comments

P3, L-2:1: Not a sentence

\S 5.3.1: Why call this THDM?