Employing GPUs to accelerate exact 3D geometric computation

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The challenge:

- Fast and exact 3D geometric computation.
- E.g.: intersect two big triangular meshes.

Solution:

- Correctness:
- Exact computation (rationals).
- Performance:
 - GPUs: good for (inexact) floats.
 - \circ Interval Arithmetic (IA): inexact floats \rightarrow accelerate exact computation.

Results:

- Comparing against sequential implementation (accelerated with IA):
- \circ 993x speedup in the intersection tests.
- 99x total speedup.

