

RIDIR Report

Andres Calderon

University of California, Riverside

September 25, 2019

OGC specification

- ▶ OpenGIS Implementation Standard for Geographic information - Simple feature access¹
 - ▶ Section 6.1.11 Polygons: Clarify format for polygons with holes.
i.e. POLYGON (
 (exterior ring), (interior rings)*
)
 - ▶ Section 6.1.14 Multipolygons: Clarify the format for multipolygons.
i.e. MULTIPOLYGON (
 ((polygon 1)),
 ((polygon 2)),
 ((polygon n))*
)

¹<http://www.opengeospatial.org/standards/sfa>

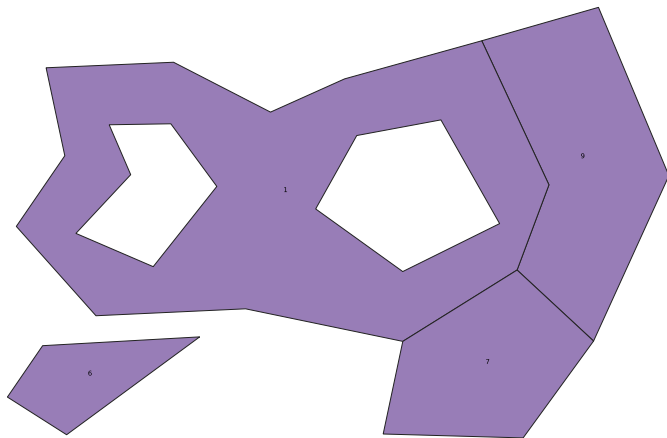
OGC specification

- ▶ OGC specification also provides methods to get number of holes and geometries and check if a feature is simple and valid.
- ▶ JTS library (GeoSpark) implements the OGC implementation.
- ▶ I have coded a simple **GeometryChecker** routine to obtaining info about the input layers.

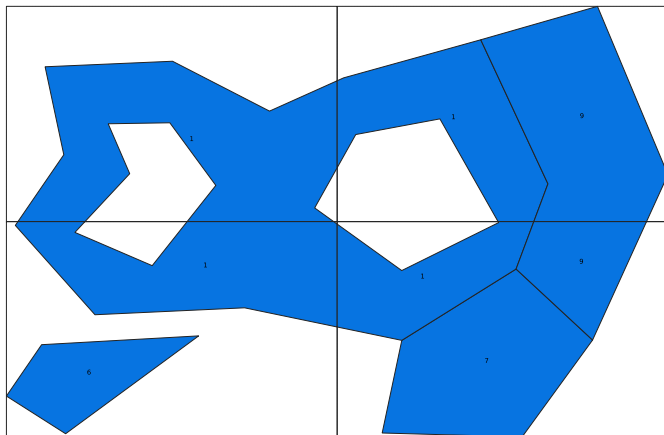
Dealing with holes

- ▶ With the methods provided by JTS it was easier to track the holes and which polygon they belong to and adjust the DCEL accordingly.
- ▶ First tried with demo polygons in sequential and parallel approaches. Then tested with a bigger dataset (California districts).
- ▶ The output is consistent with the expected results.

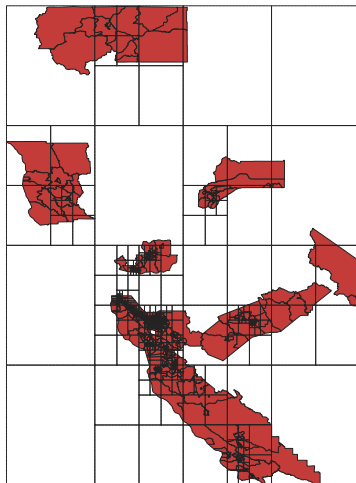
Validation - Demo sequential



Validation - Demo parallel



Validation - CA_sample parallel



What is next?

- ▶ Fixing a bug during reading of WKT features.
- ▶ Check support for multipolygons.
- ▶ Tests with bigger datasets.