Pigeon
A Spatial MapReduce Language

http://spatialhadoop.cs.umn.edu/pigeon

Ahmed Eldawiy
Mohamed F. Mokbel
University of Minnesota

Big spatial data

Pig = Good for non-spatial data

Overview

Pigeon

Spatial Datatypes
- Point
- LineString
- Polygon
- MultiLineString
- MultiPolygon
- GeometryCollection

Spatial Functions
- Basic Function
- Spatial Predicates
- Spatial Analysis
- Aggregate Functions

Data Types

- Well-known Text
- Well-known Binary

Function call

Result

Geometry Processing

OSM Dataset

planet.osm

450 GB XML file
Updated Daily
Contains map data, e.g., road network, lakes, parks, country and city borders

Visit us

Tap your NFC-enabled device here

OR

Scan this QR code

Show Cases

Planet Extraction

Filtered Extraction

Analysis

Running Scripts

Dataset Selector

Active Queries

Preview selected relation/
Show script progress

Write and execute a Pigeon script

Big spatial data = Pig

= OGC Compliant

Problem = Solution

Basic Functions

Retrieves basic information of a single object.
Examples
- Length
- Area
- MakePoint
- MakePolygon

Predicate

Tests a spatial predicate for one or two shapes
Examples
- IsClosed
- Intersects
- Touches
- IsEmpty

Analysis

Performs a spatial transformation of given object(s)
Examples
- Centroid
- Intersection
- Union

Aggregate

Computes a single value that summarizes a given set of shapes
Examples
- ConvexHull
- Envelope