SunnyMinutes – by Peter Komar

Problem ⟶ Business insight

There's no easy way to know how much sunlight an office or apartment in downtown Manhattan will get during the year before renting

Pricing of apartments/offices can be supported by this new feature: **Minutes of direct sunlight**

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Data:

- OpenStreetMap data of heights of buildings

  Building = list of Nodes + height (+ other tags)
  Node = longitude + latitude

- Stored in mySQL tables:

```
Nodes(
    Id INT,
    X FLOAT(20,10),
    Y FLOAT(20,10),
    Z FLOAT(20,2),
    Order_in_building INT,
    Number_of_nodes_in_building INT,
    Building_id INT,
    Block_id INT
)
```

```
Blocks(
    Id INT,
    Xmin FLOAT(20,10),
    Xmax FLOAT(20,10),
    Ymin FLOAT(20,10),
    Ymax FLOAT(20,10),
    X_id INT,
    Y_id INT,
    Max_height FLOAT(20,10)
)
```
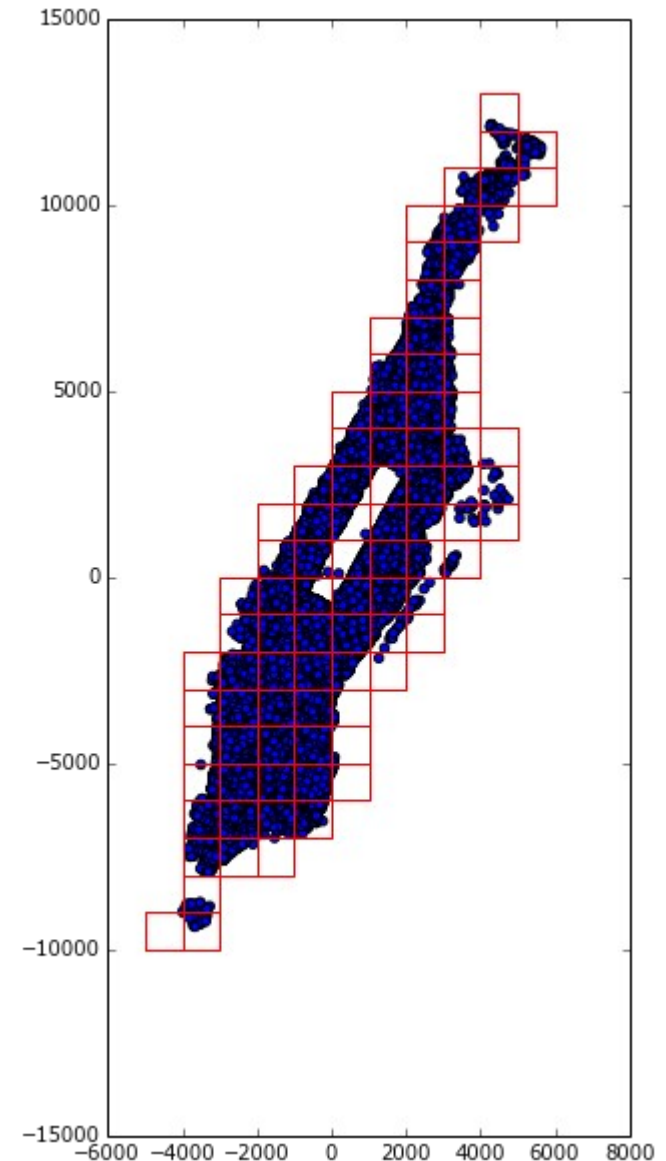
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Algorithm:

1. Group the buildings into larger rectangular blocks of
500m x 500m (1640 ft x 1640 ft)

2. Find the observer's block

3. Render the entire
360 degrees skyline above
observer's horizon from block
and neighboring blocks

4. Minute by minute, calculate the
Sun's position on the sky

5. For each minute, determine
whether the Sun is blocked

639 min sunny / 896 min total