# PFLOCK Report

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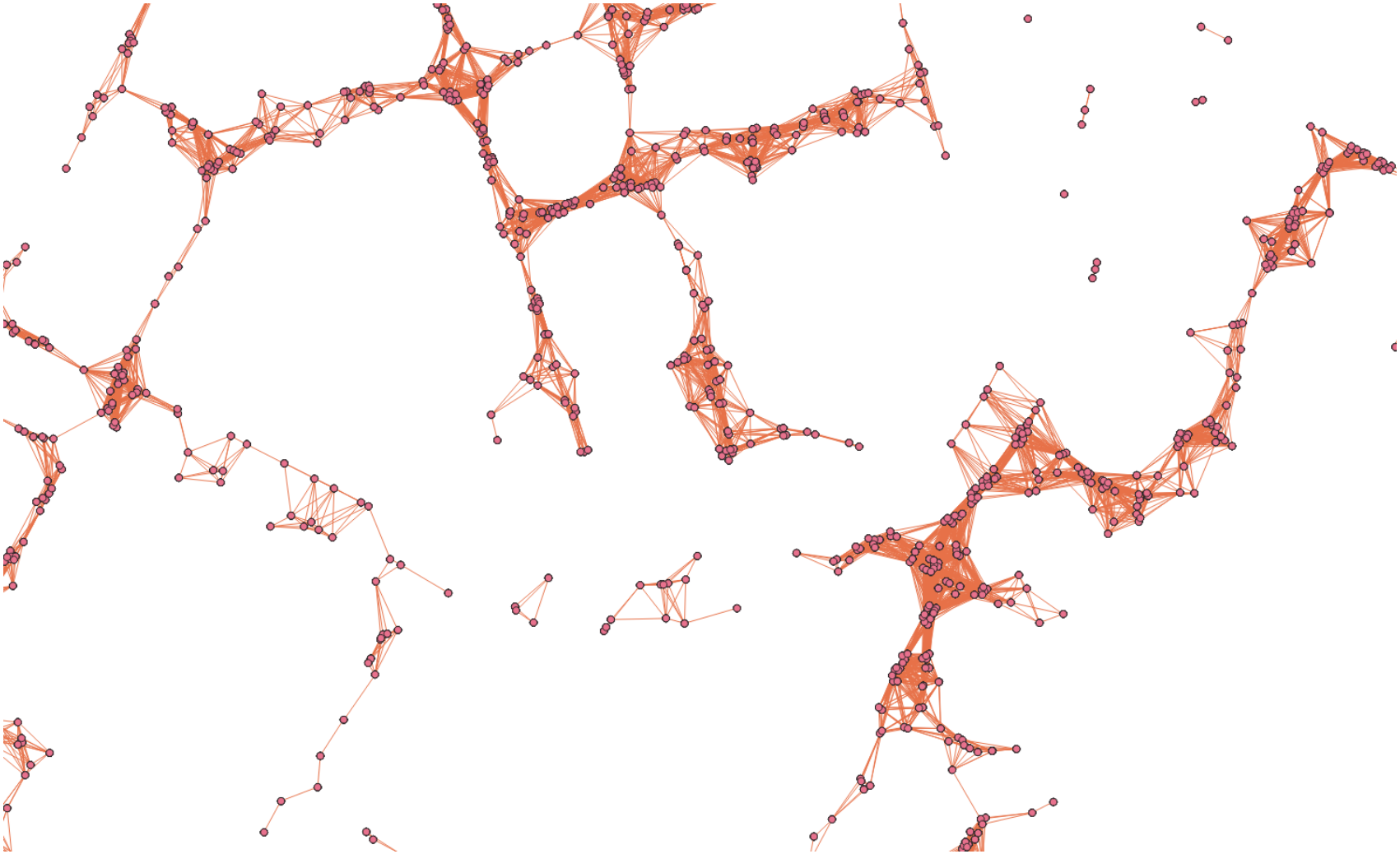
# Reducing number of candidate centers

## Overall approach

1. Identify dense partitions:
   - by number of connection at each point.
2. At each partition built local partitions:
   - it can be done using DBScan or uniform grids.

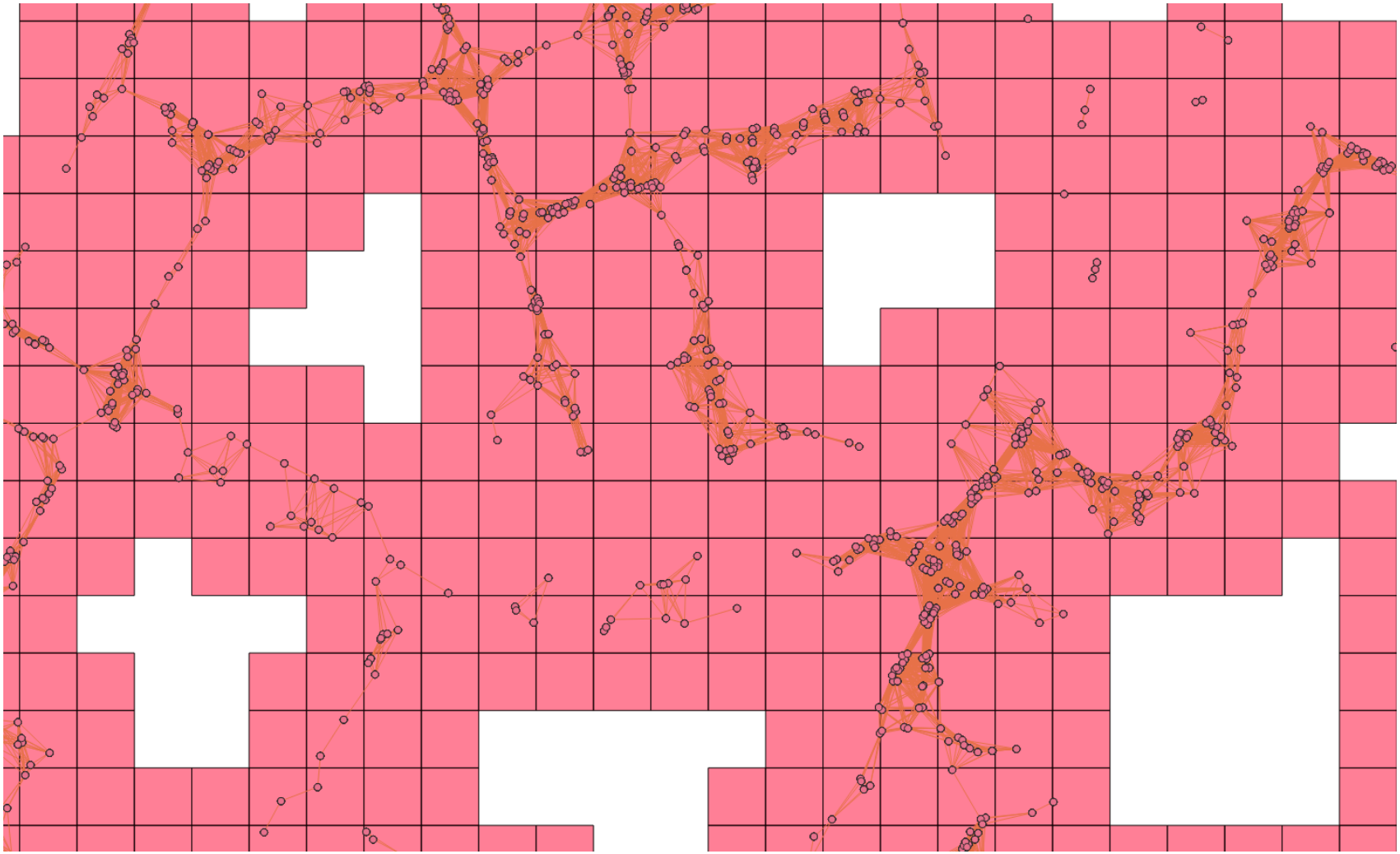
# Local - partitioning

## DBScan



# Local - partitioning

## Uniform grids

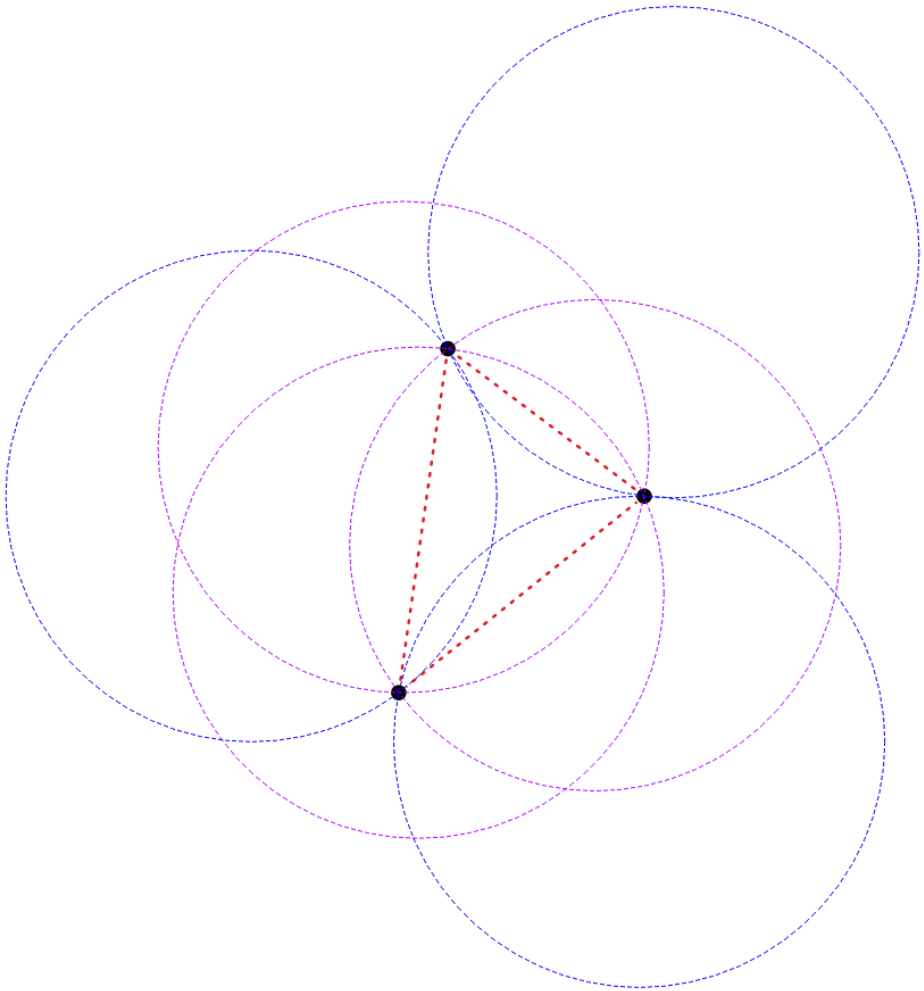


# Reducing number of candidate centers

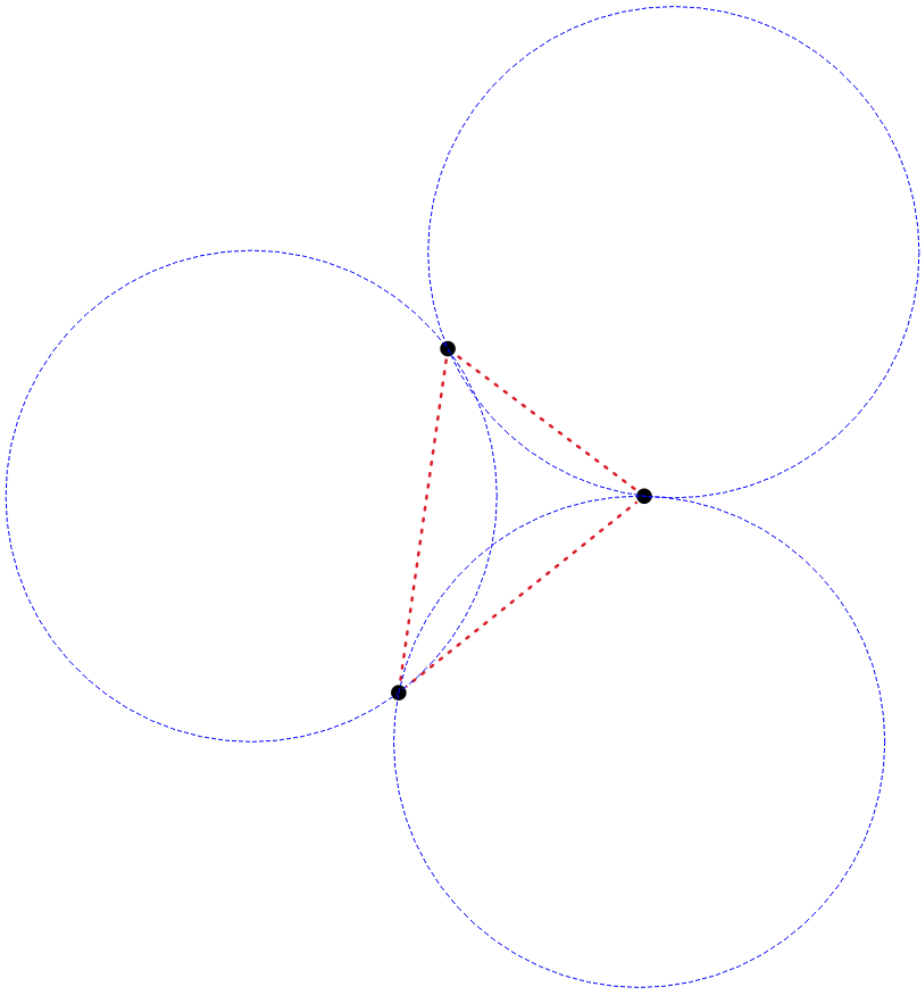
## Overall approach

1. Identify dense partitions:
   - by number of connection at each point.
2. At each partition built local partitions:
   - it can be done using DBScan or uniform grids.
3. For each local partition:
   - 3.1 If the farthest points distance $< epsilon$:
     - retrieve centroid as unique center
   - 3.2 Find full set of triangles for the graph:
     - retrieve the centroids of each triangle.

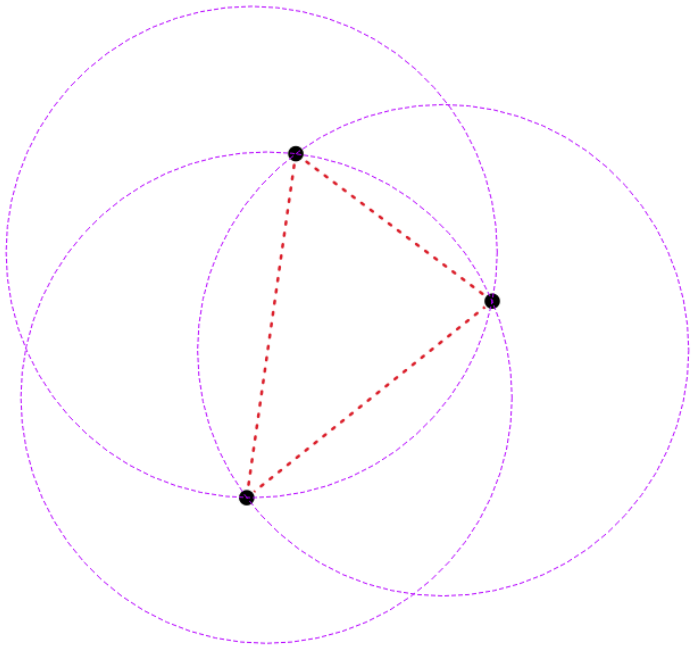
# Centers by tringles



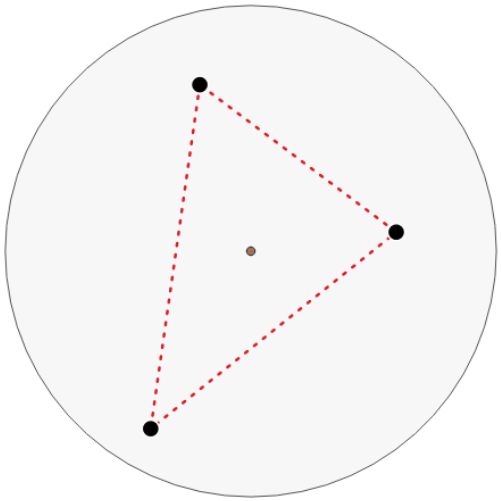
# Centers by tringles



# Centers by tringles



# Centers by tringles



# Notes

- We can use farthest point distance or smallest enclosing circle which can be done in linear-time.
- Find all the triangles on a graph is quite costly ($O(n^{1.5})$ in the number of edges), we will depends on a fine-grain partitions.