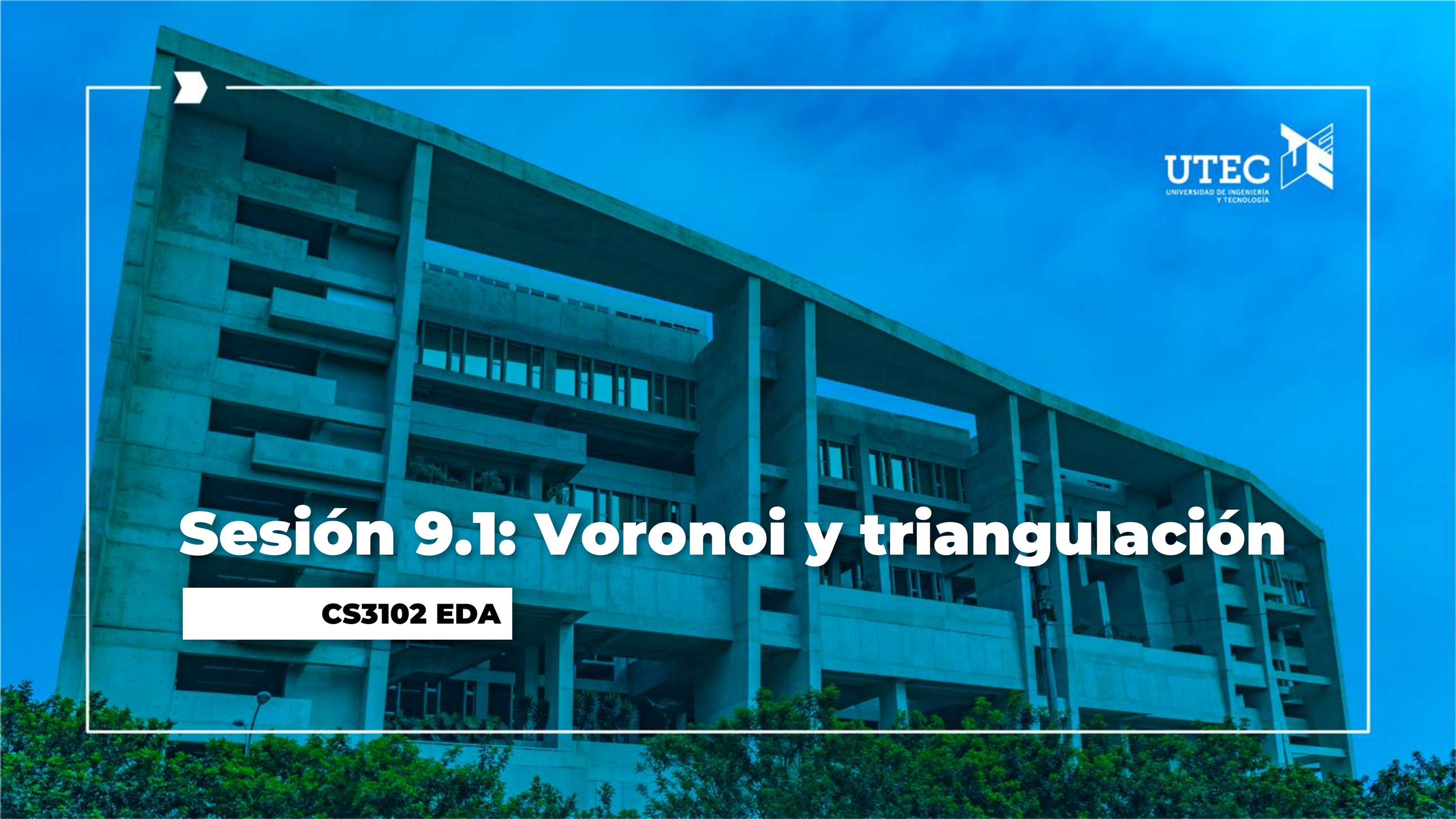

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Sesión 9.1: Voronoi y triangulación

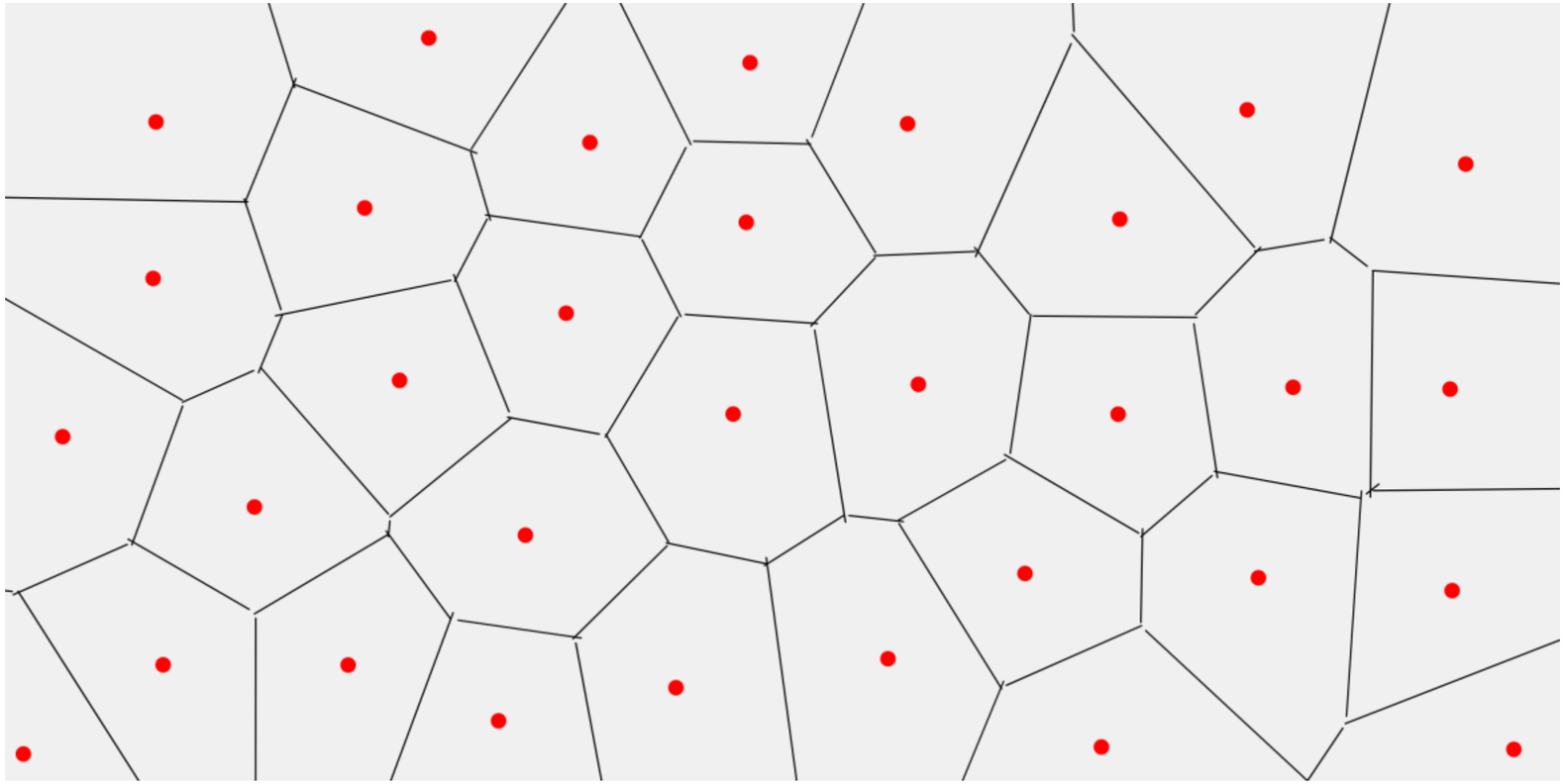
CS3102 EDA

Índice

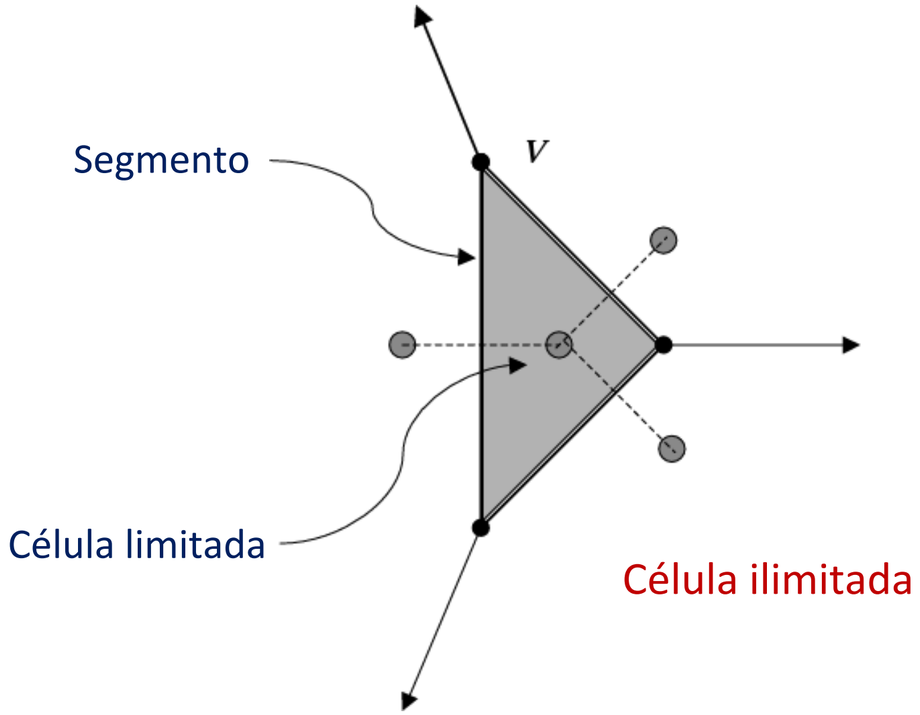
1. Voronoi Diagram
2. Delaunay triangulation

1. **Voronoi** Diagram

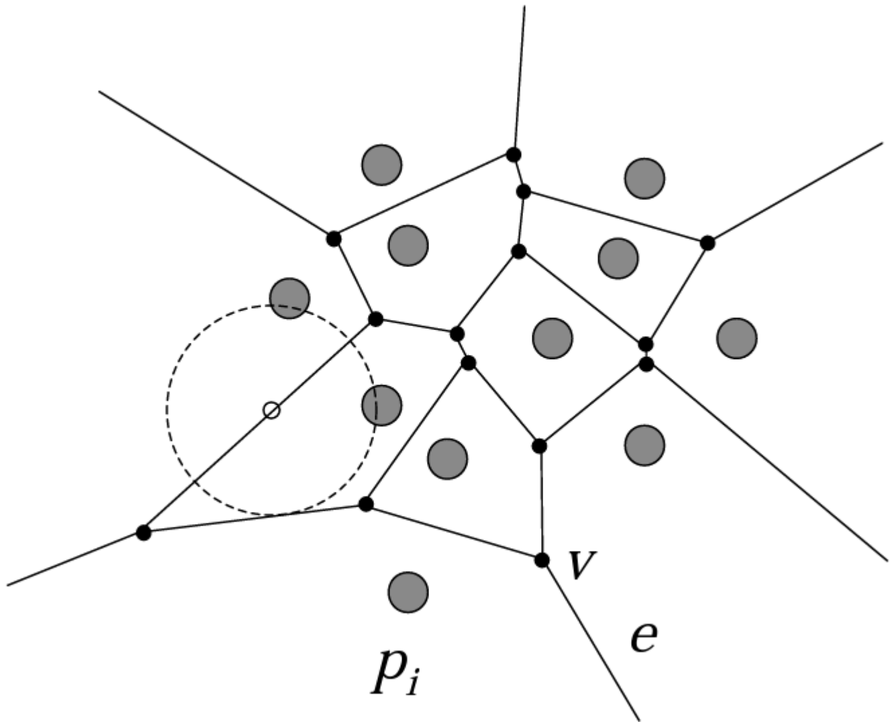
Voronoi *Diagram*



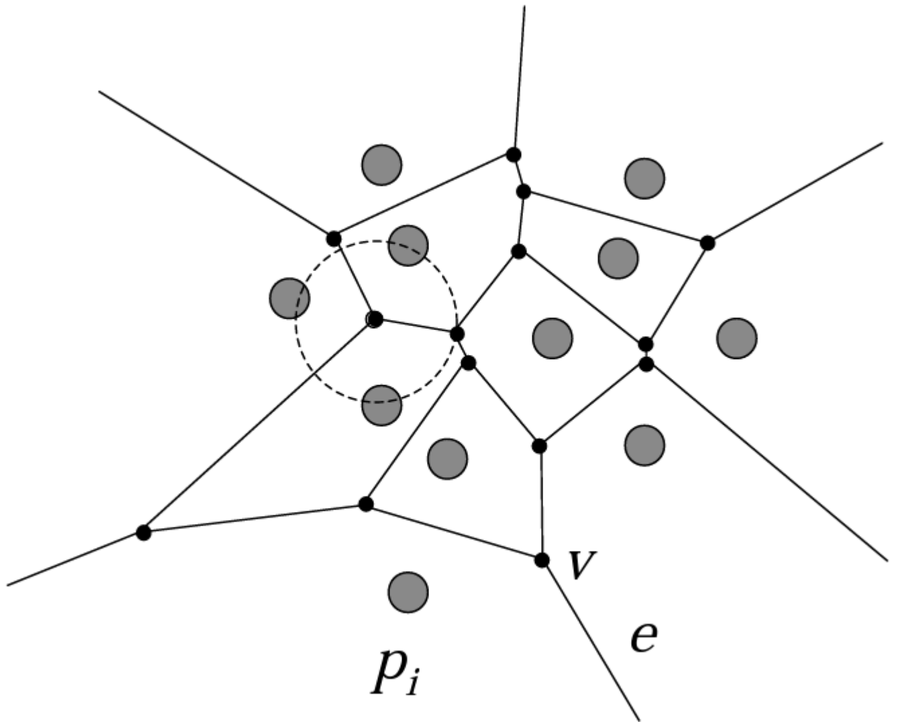
Voronoi *Diagram*



Voronoi *Diagram*

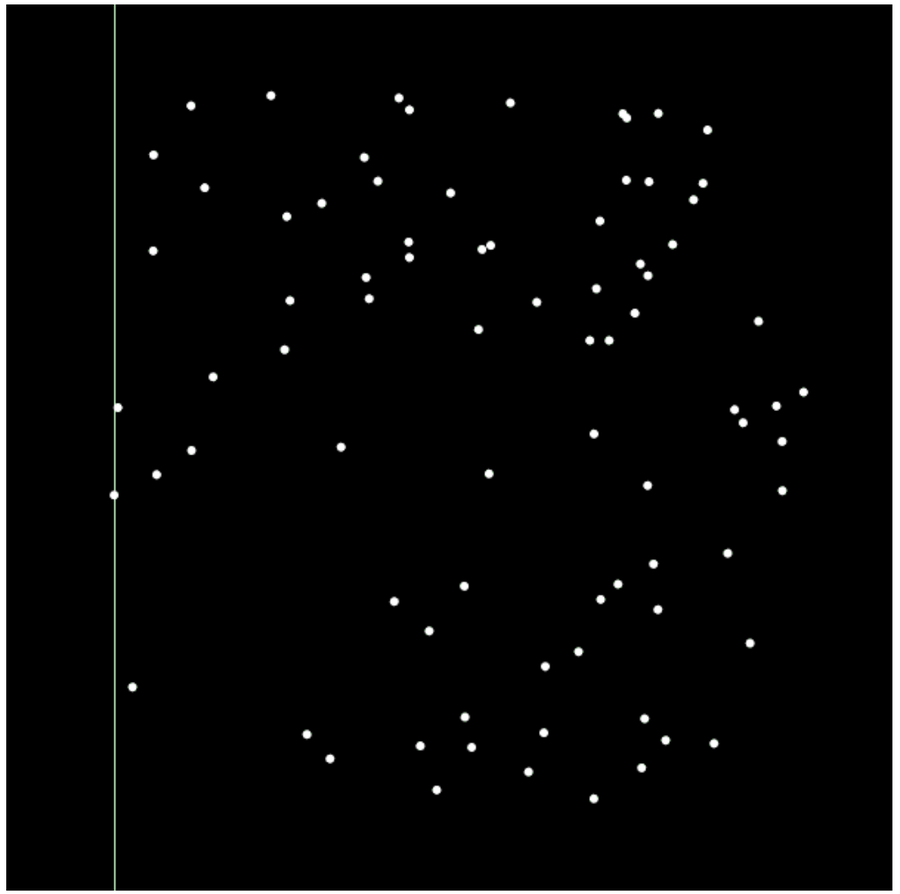


Línea equidistante a los dos puntos

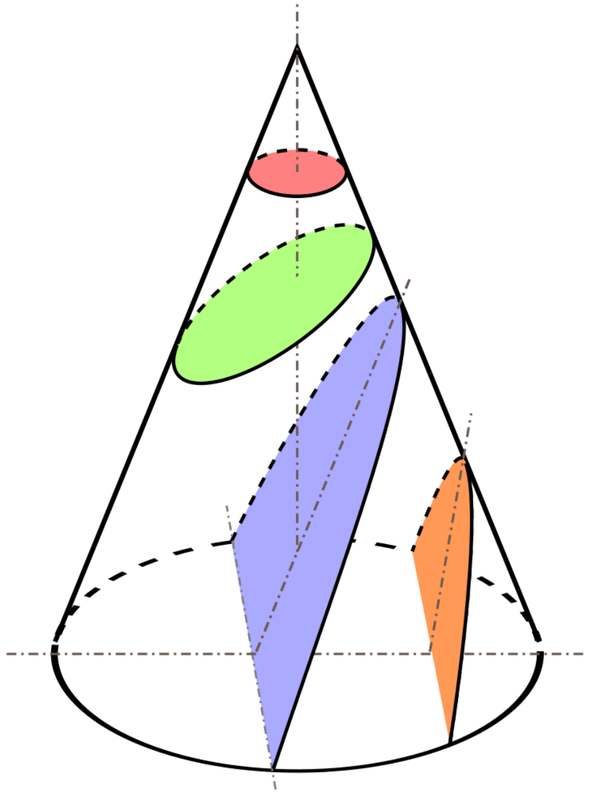


Punto equidistante a los tres puntos

Fortune *algorithm*

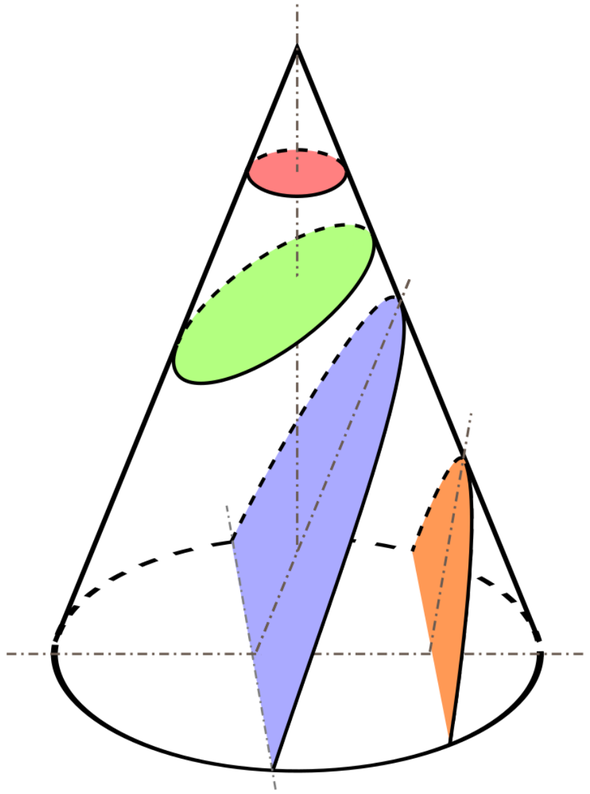


Conic *section*



Círculo $d(C, x) = r$

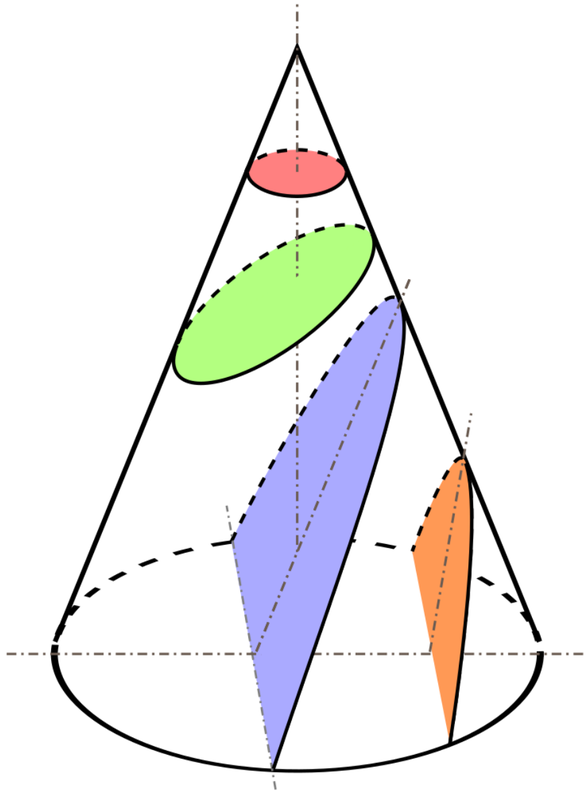
Conic *section*



Círculo $d(C, x) = r$

Elipse

Conic *section*

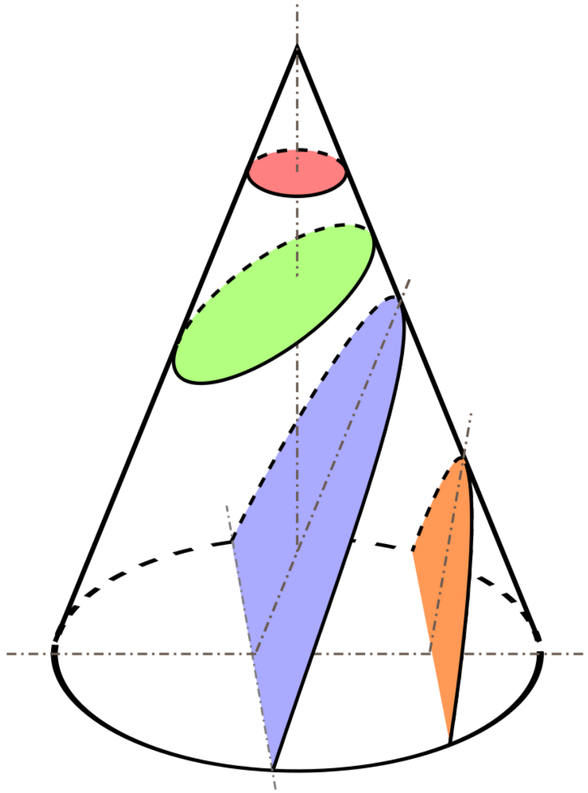


Círculo $d(C, x) = r$

Elipse $d(F_1, x) + d(F_2, x) = c$

Parábola

Conic *section*



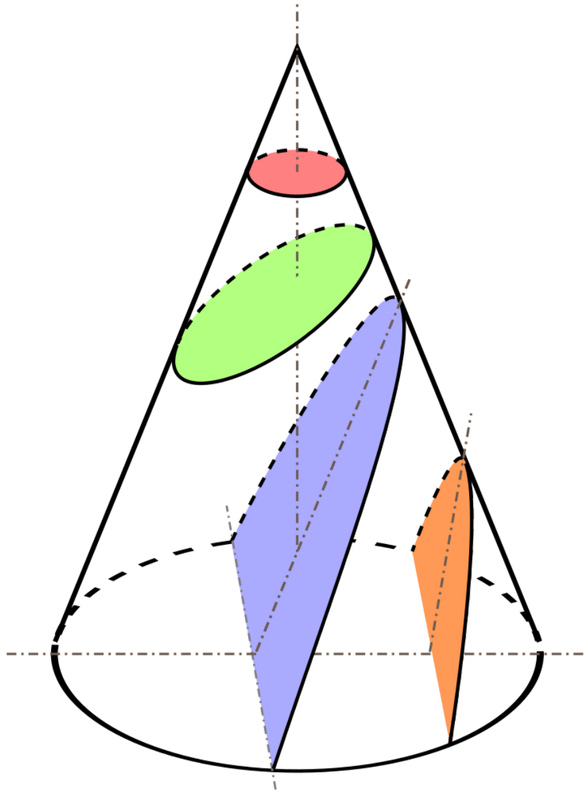
Círculo $d(C, x) = r$

Elipse $d(F_1, x) + d(F_2, x) = c$

Parábola $d(F, x) = d(\ell, x)$

Hipérbola

Conic *section*



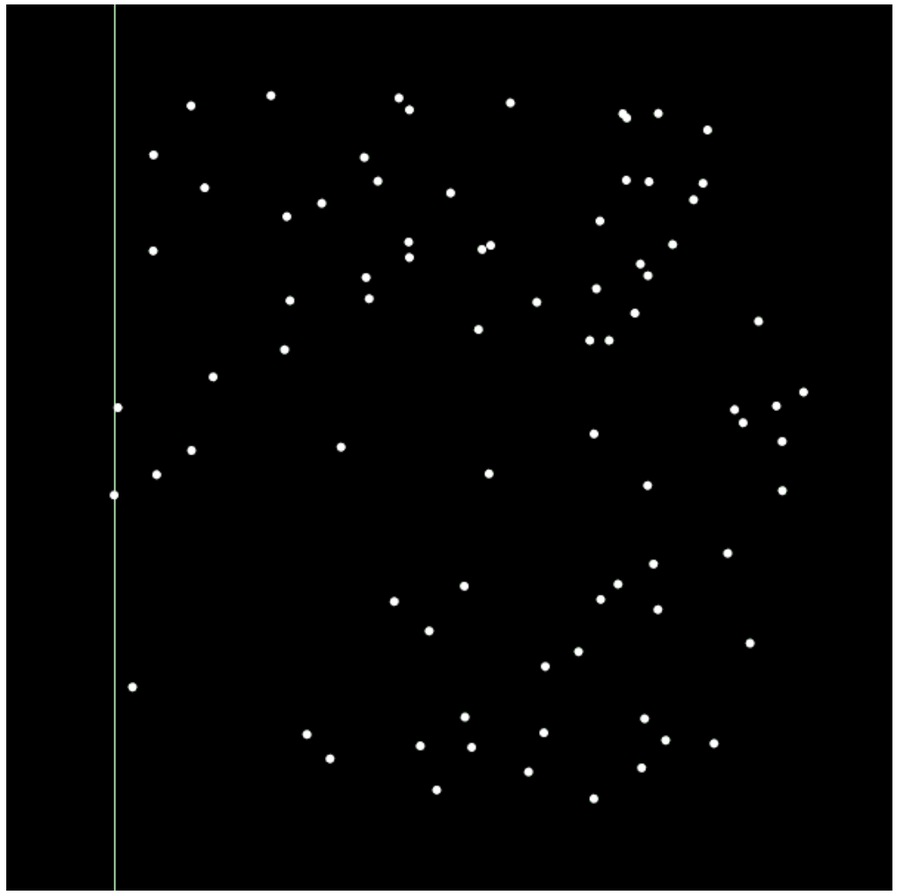
Círculo $d(C, x) = r$

Elipse $d(F_1, x) + d(F_2, x) = c$

Parábola $d(F, x) = d(\ell, x)$

Hipérbola $|d(F_1, x) - d(F_2, x)| = c$

Fortune *algorithm*

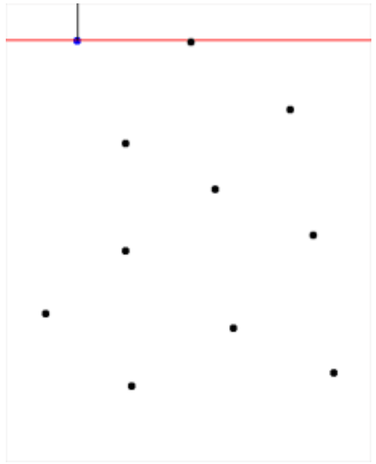


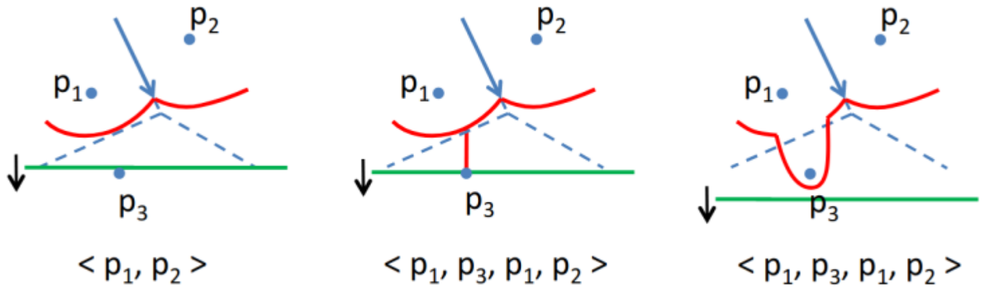
Fortune *algorithm*

Vamos a identificar eventos!

Fortune *algorithm*

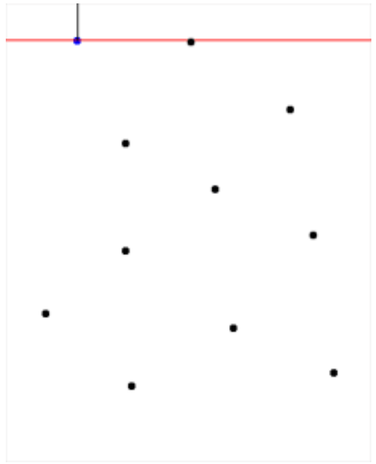
Point event

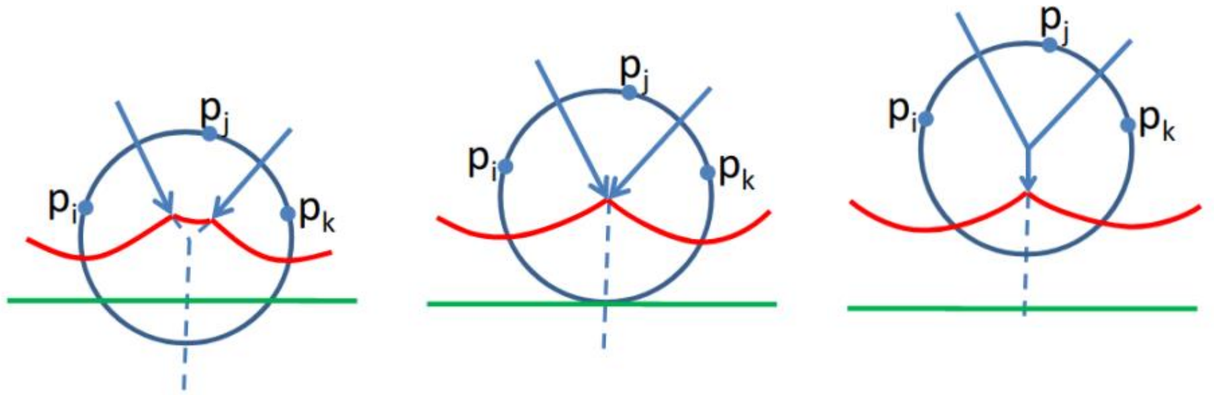




Fortune *algorithm*

Vertex event

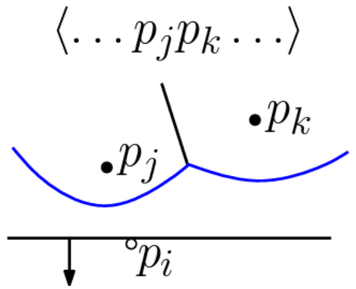


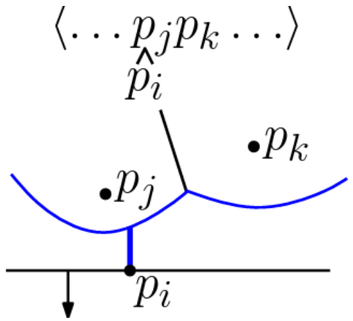


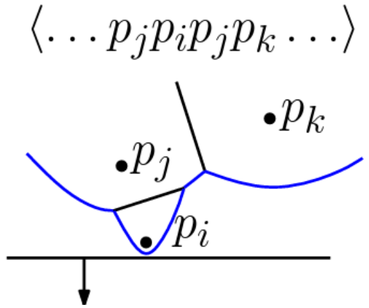
Fortune *algorithm*

Point event

Nuevo punto

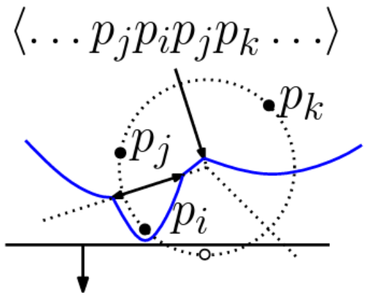


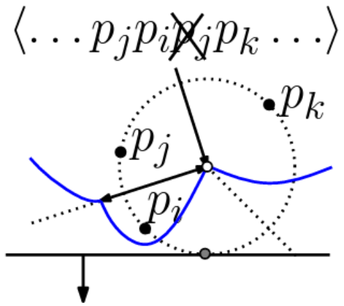


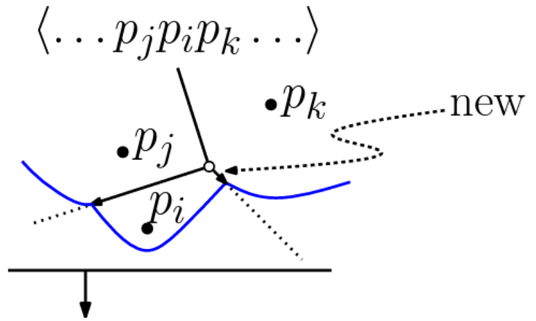


Circle event

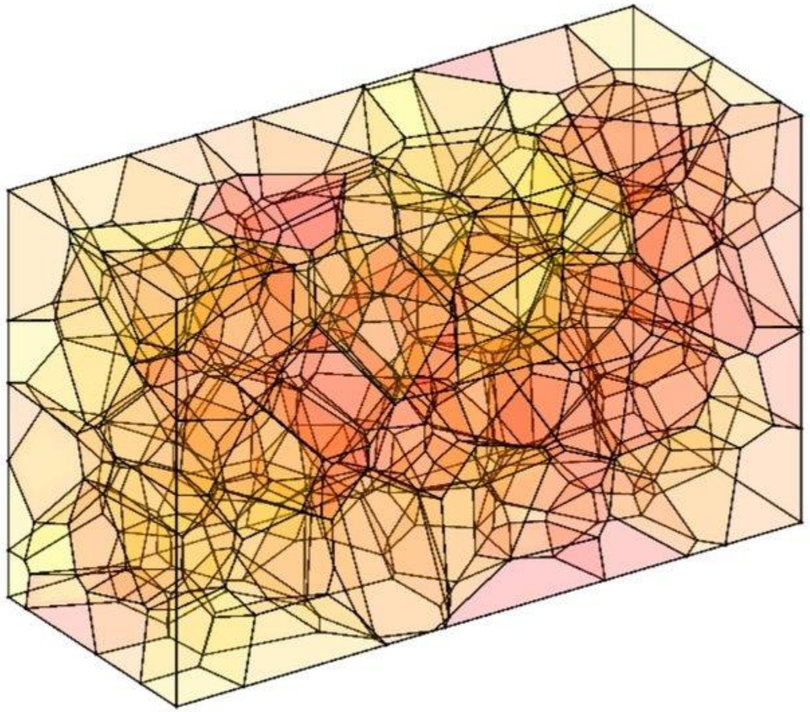
Creación de un “punto triple”



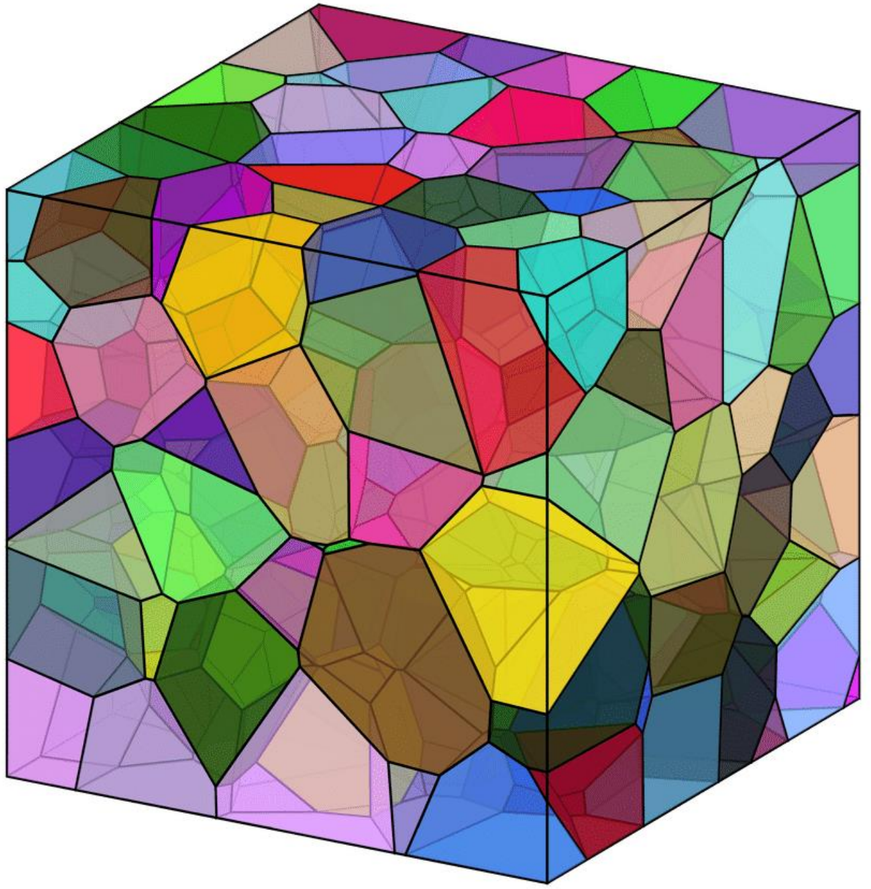




3D Voronoi *Diagram*

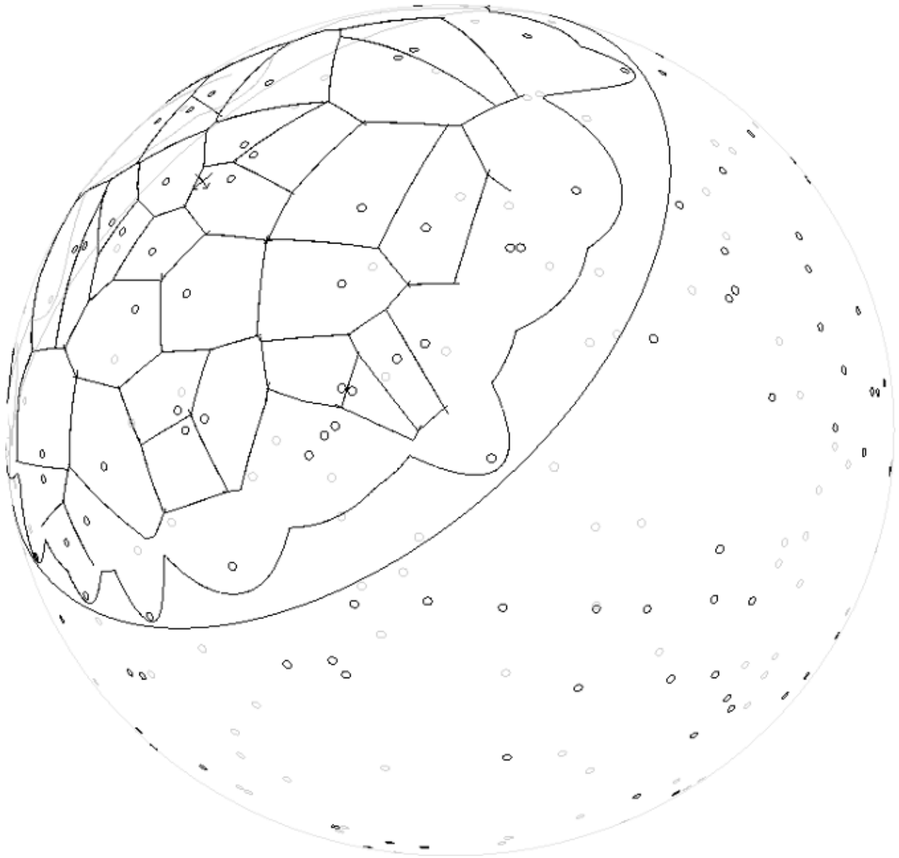


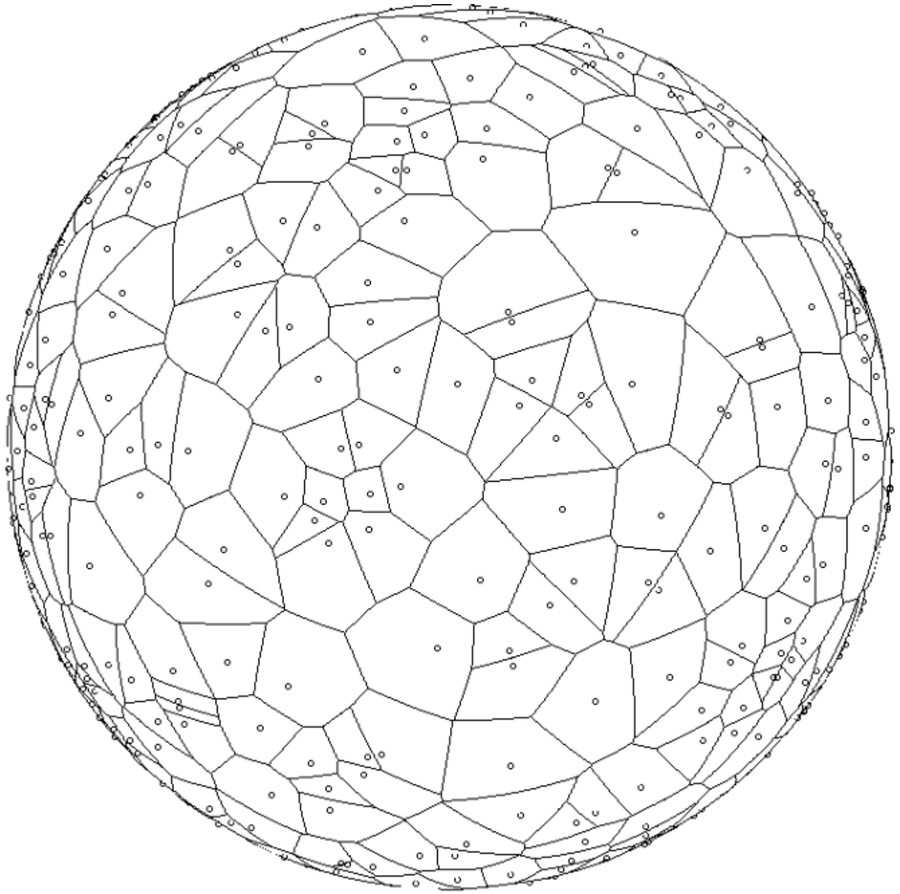
3D Voronoi *Diagram*



Voxel *algorithm*

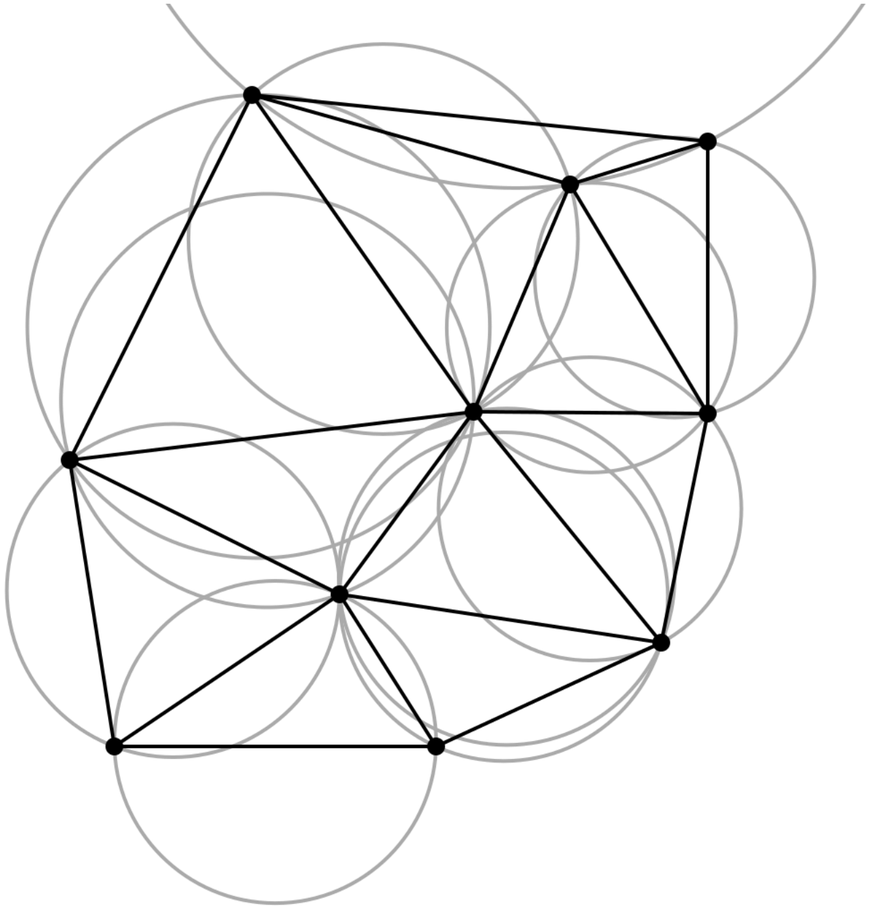
Voronoi *Diagram*





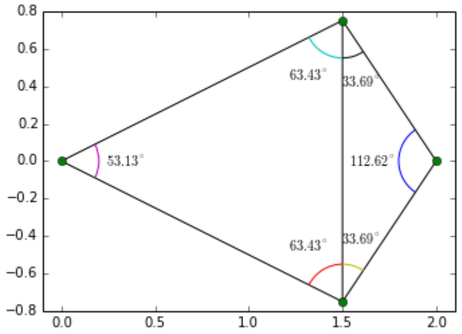
2. **Delaunay** triangulation

Delaunay *triangulation*



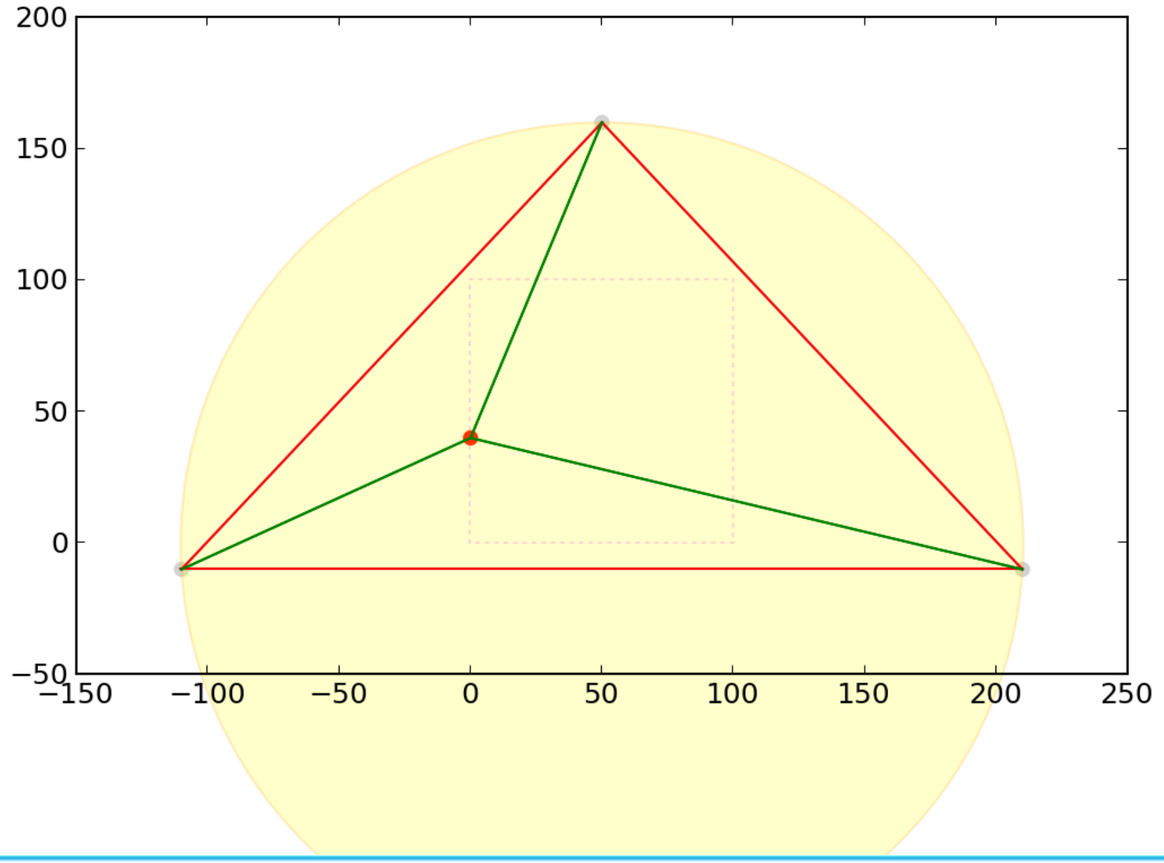
Delaunay *triangulation*

Flipping

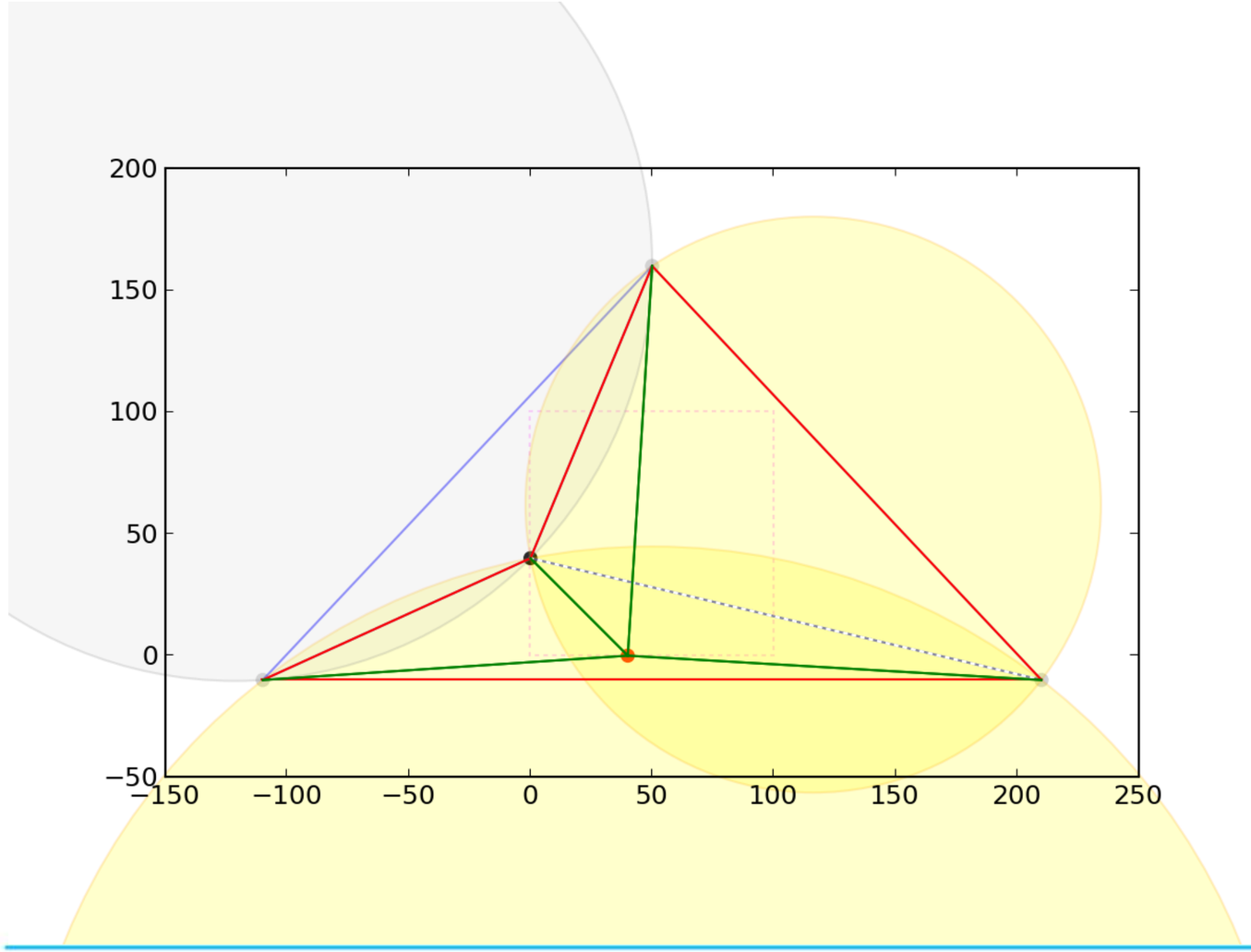


Podemos resolver que una triada de puntos no cumpla el criterio de Dealunay rotando la división (ver animación)

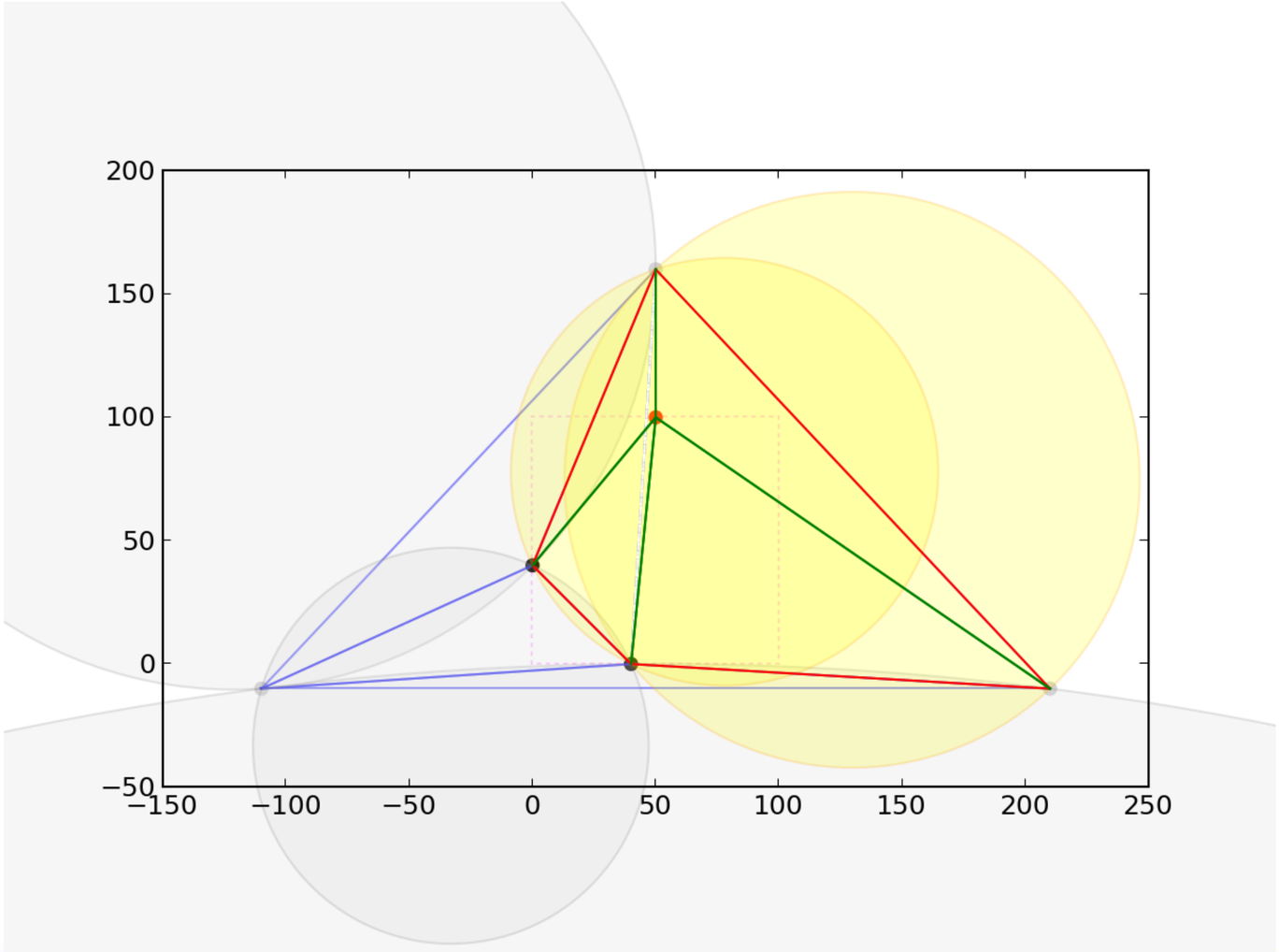
Bowyer–Watson *algorithm*



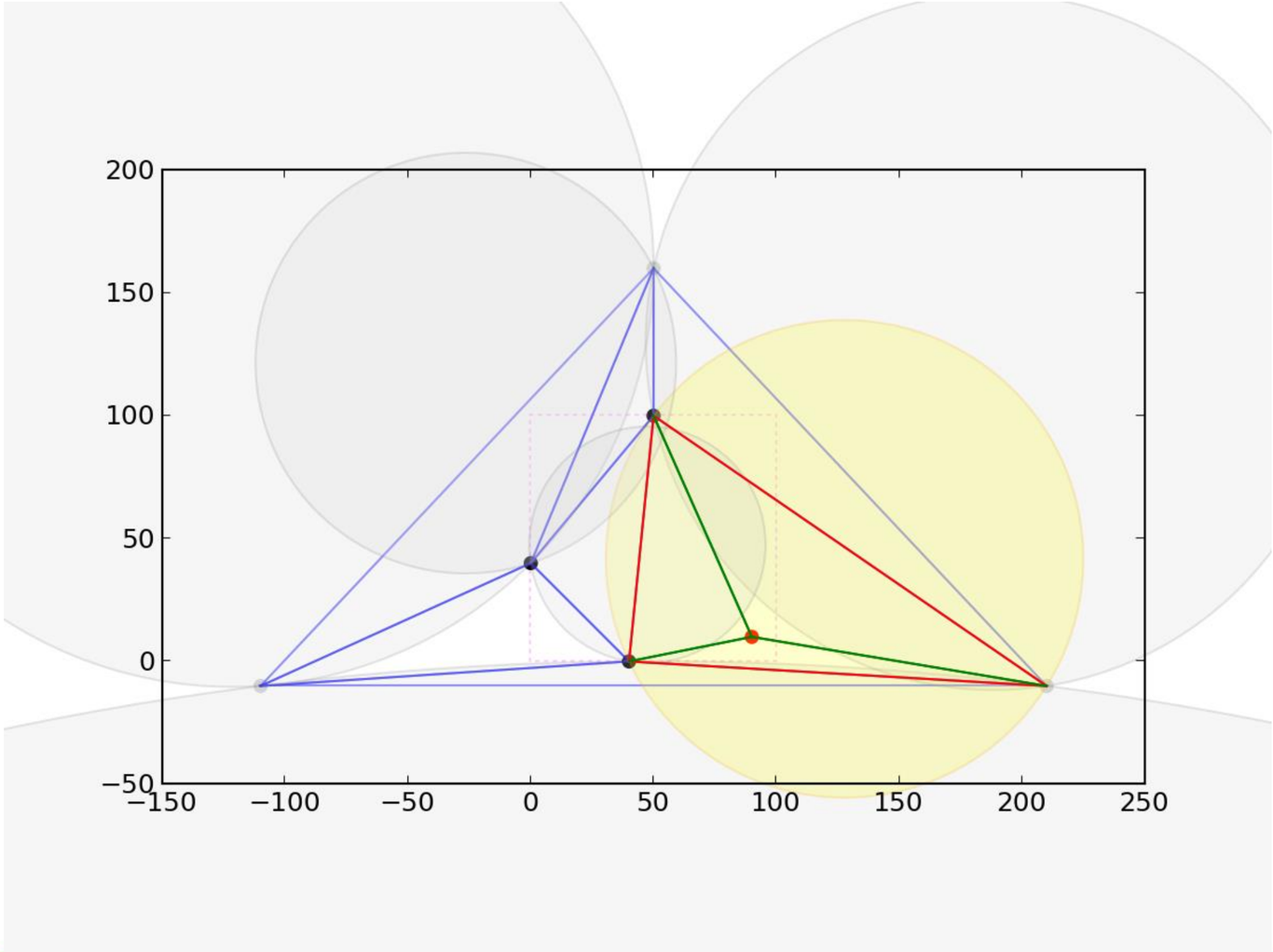
Bowyer–Watson *algorithm*



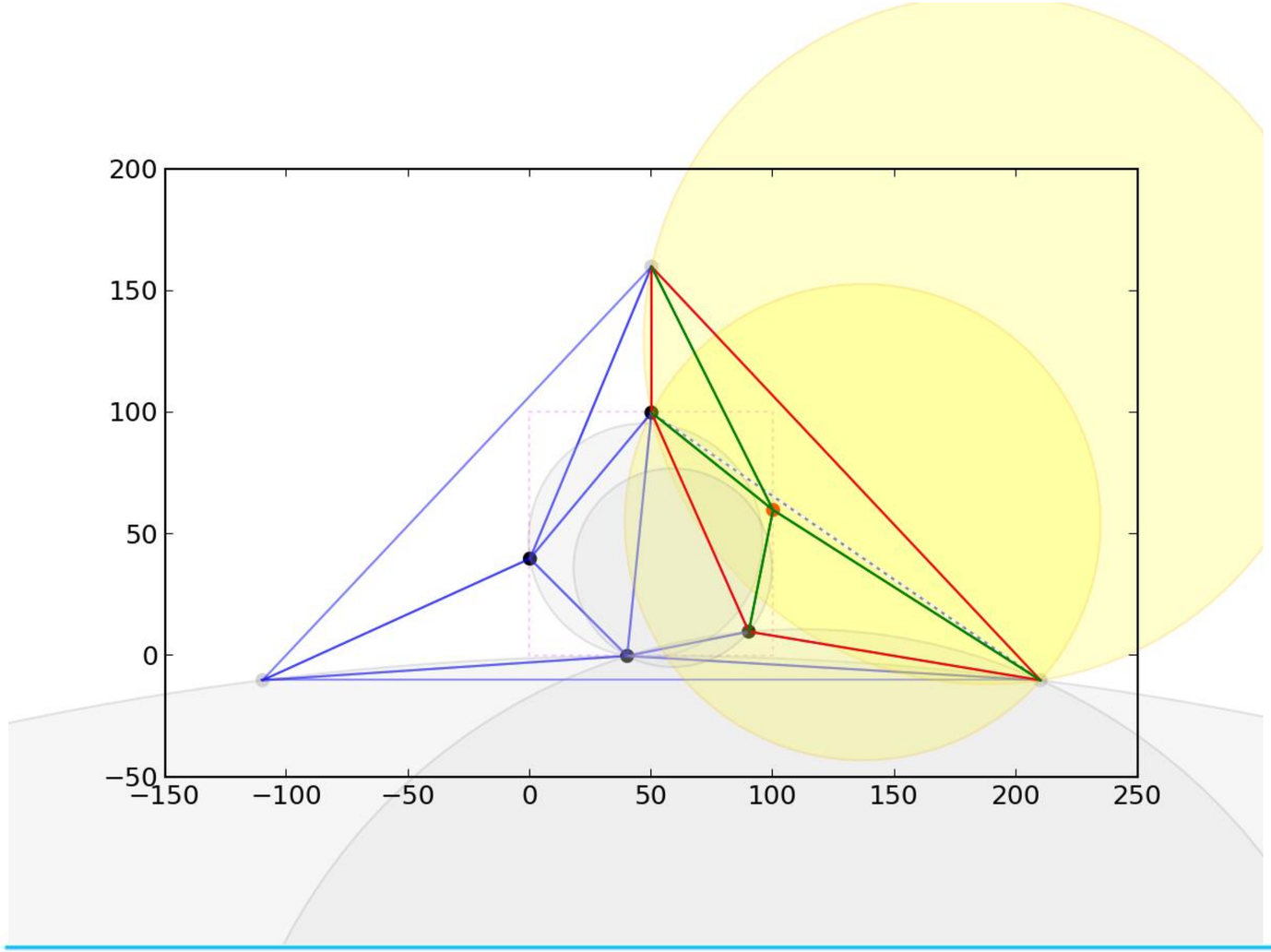
Bowyer–Watson *algorithm*



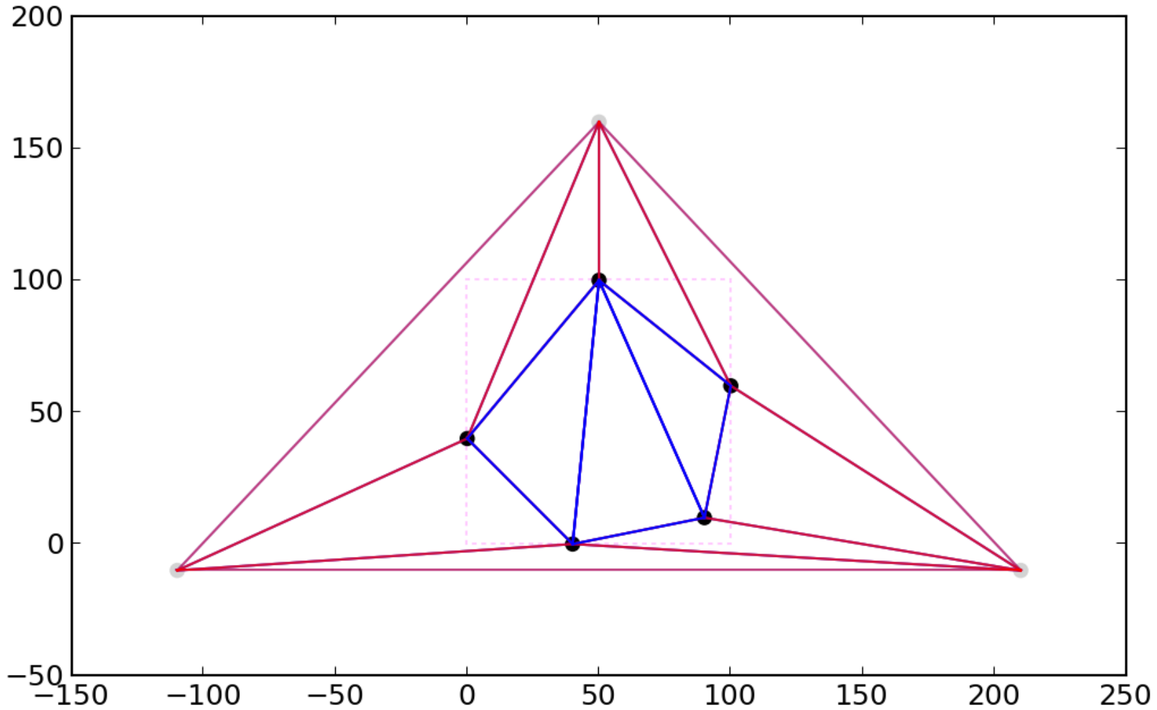
Bowyer–Watson *algorithm*



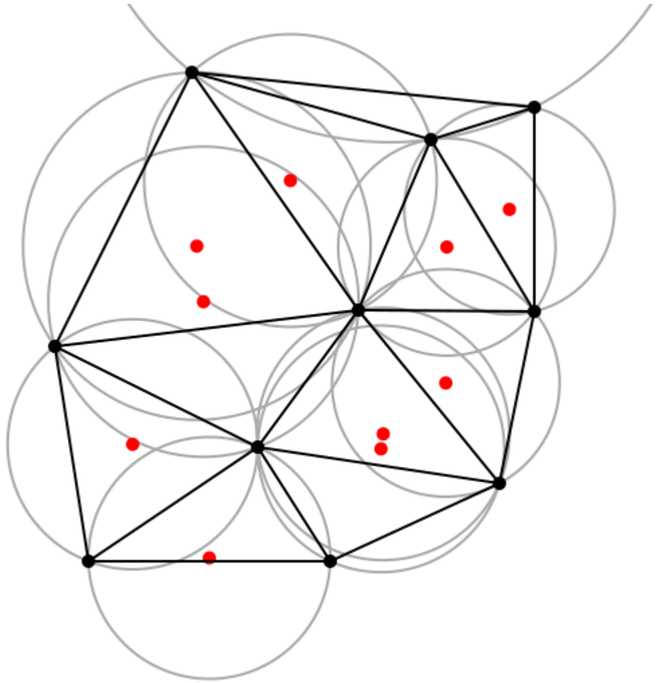
Bowyer–Watson *algorithm*

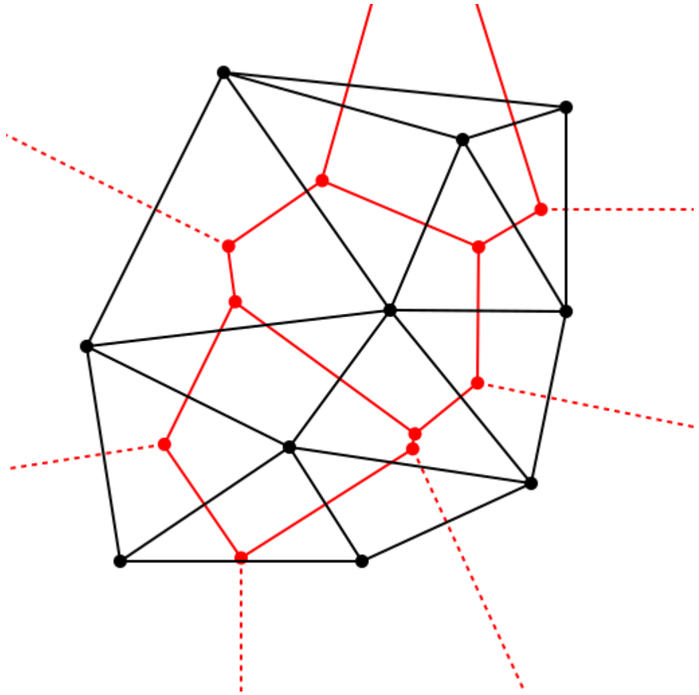


Bowyer–Watson *algorithm*

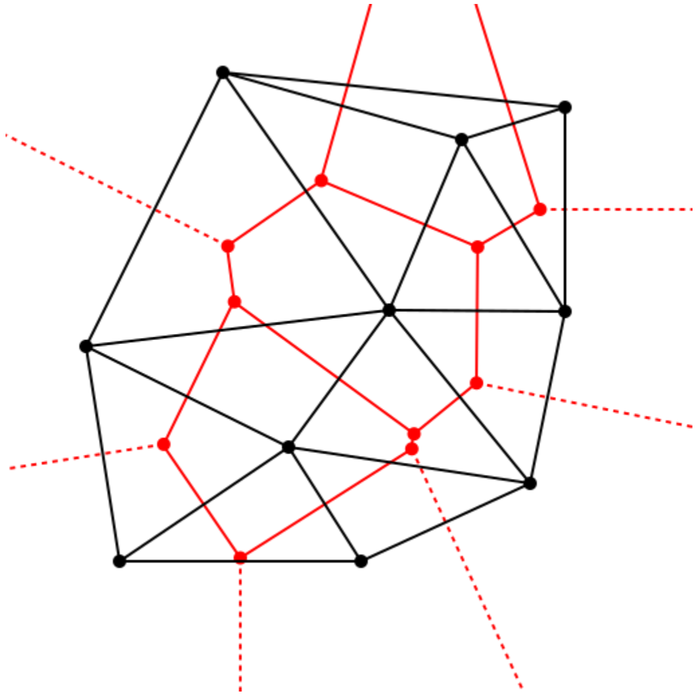


Delaunay triangulation vs *Voronoi diagram*





Delaunay triangulation vs *Voronoi diagram*



Delaunay triangulation vs *Voronoi diagram*

https://cartography-playground.gitlab.io/playgrounds/triangulation-delaunay-voronoi-diagram/

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