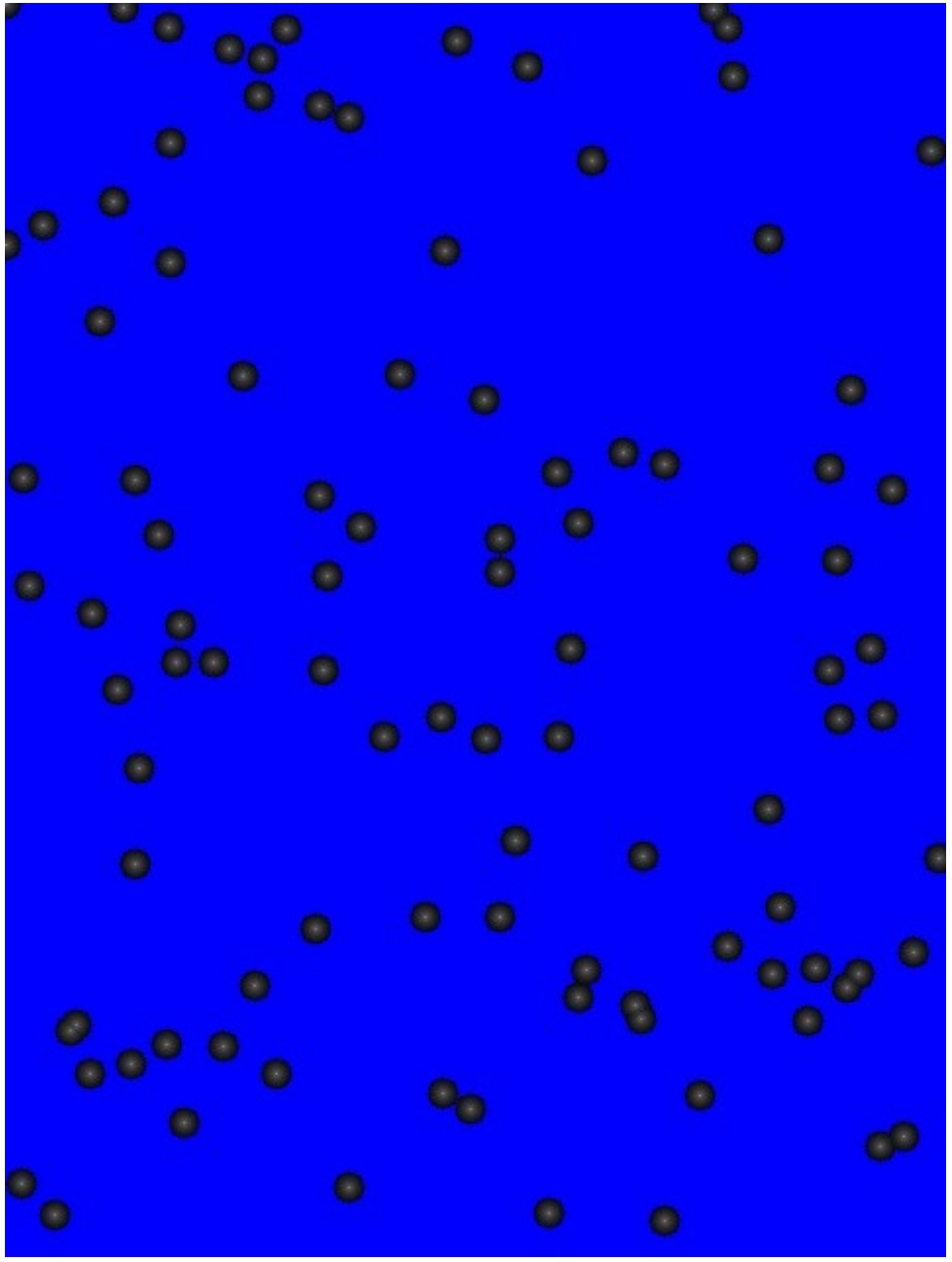
Computing the Distance Map

Modified Version of *Dijkstra algorithm.*

Each grid cell **c** stores:

- `d`: distance from nearest point
- `parent`: pointer to the nearest point

- We initialize the grid cells which corresponds to the points in $\mathcal{P}$ as:
  - `p.d = 0`
  - `p.parent = p`



Computing the Distance Map

- We expand each initialized grid cell p, *i.e.* we take the 8 neighbors.
- For each of these expanded cells c_i

```
d_p,c = distance(p,c_i)
If (c_i.isEmpty()) {
   c_i.d = d_p,c
   c_i.parent = p.parent
} else if (c_i.d > d_p,c) {
      c_i.d = d_p,c
      c_i.parent = p.parent
}
```

- Continue iteratively for all the expanded cells.