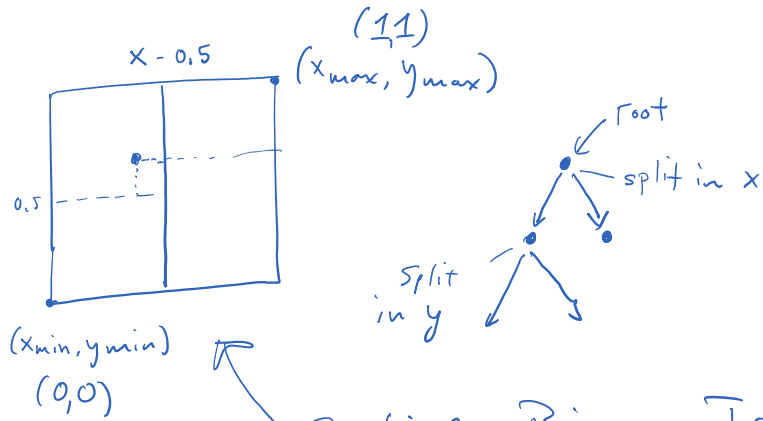


Partition

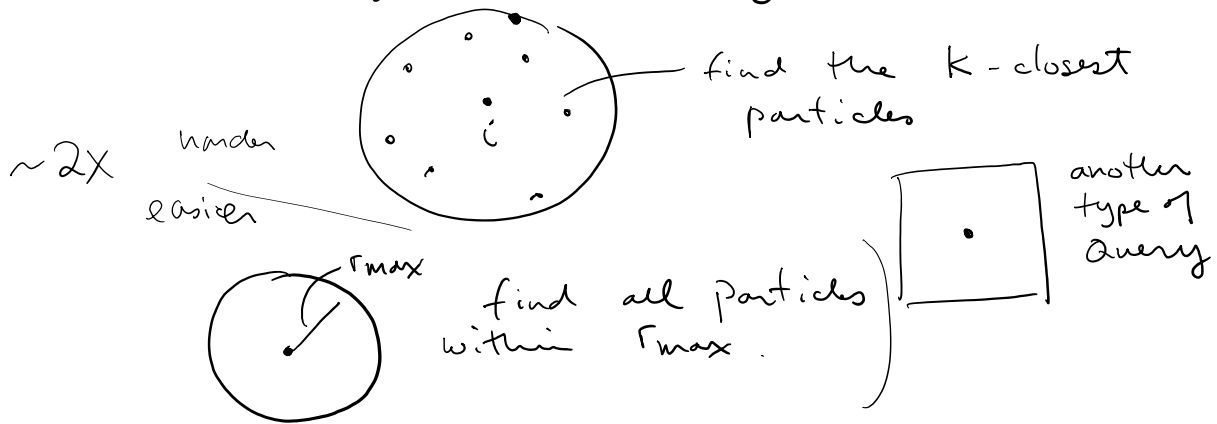


If you use the median of the $\{x, y, z\}$ values, then you get a k-D tree.

Spatial Binary Tree every 3rd level \equiv octtree (in 3D)

very fast for searching

Nearest Neighbor Searching



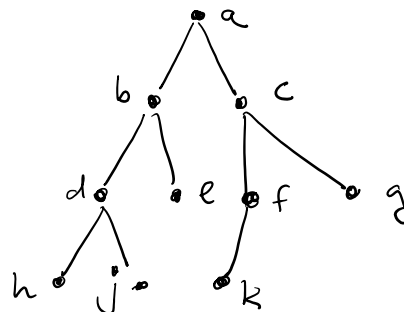
Recursion

LNR

```

lnr(p) {
  if (p != null);
  lnr(p->left);
  print(p->letter);
  lnr(p->right);
}
    
```

hdjbeakfcg

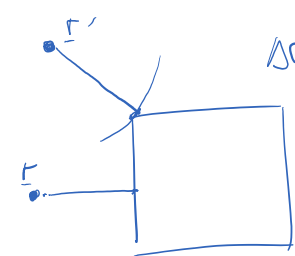


NLR: abdhje cfk g

hdjbeakfcg

```
dist2(r, p->left) < dist2(r, p->right)
```

```
NN(p) {  
  if ( ( ) ) {  
    NN(p->left);  
    NN(p->right);  
  }  
  else {  
    NN(p->right);  
    NN(p->left);  
  }  
}
```



$\Delta r^2 = \Delta x^2 + \Delta y^2$
Sometimes Sometimes

```
class bnd {  
  float xmin[2];  
  float xmax[2];  
}
```

dimension

```
int BALLWALK(p, r, r2max) {  
  int cnt = 0;  
  if (isLeaf(p)) {  
    for (j = p->jLower; j <= p->jUpper; ++j) {  
      if (dist2(r, A[j].r) < r2max) ++cnt;  
    }  
  }  
  else {  
    if (dist2(r, p->left) < r2max) {  
      cnt += BALLWALK(p->left, r, r2max);  
    }  
    if (dist2(r, p->right) < r2max) {  
      cnt += BALLWALK(p->right, r, r2max);  
    }  
  }  
}
```

