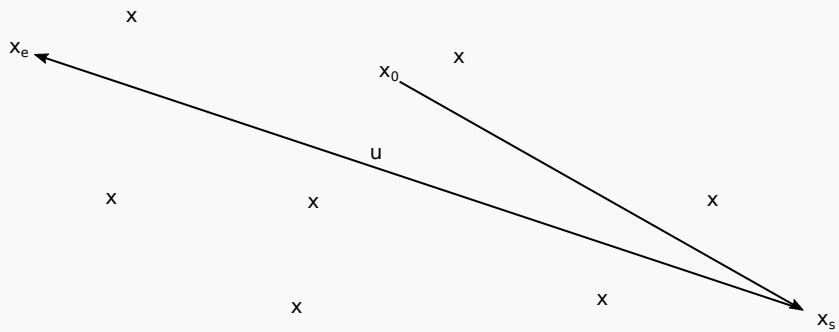


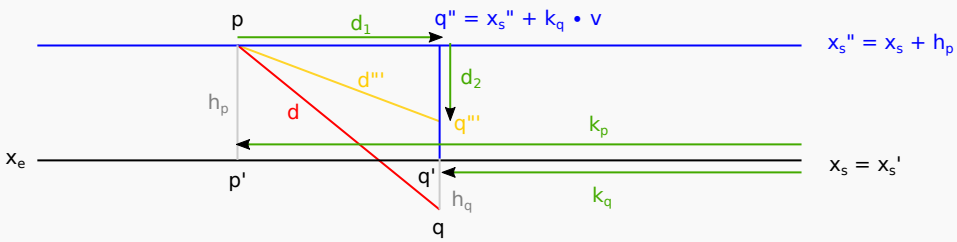
$\langle x , y \rangle := x_1 y_1 + x_2 y_2 + x_3 y_3 + \ldots$

$\|x\| := \mathrm{sqrt}(\ \langle x , x \rangle\ )$

$u := x_e - x_s$

$v := u / \|u\|$

$\mathrm{data} = \{x_0, x_1, x_2, \ldots\}$



$x' := x_s + \langle x - x_s , v \rangle\ v$

$h_x := x' - x$

$k_x := \|x' - x_s\|$

$d_1 := |k_p - k_q| = \|p' - q'\|$

$d_2 := |\ \|h_p\| - \|h_q\|\ |$

$d = \|p - q\| \geq \|p - q'''\| = \|\ (\ d_1\ ,\ d_2\ )\ \| = \delta\ (p, q)$

q''' is in the layer through p, created by the vectors v and h_p , on the line q'q'' with the distance $\|h_q\|$ from the line $x_s x_e$.

```
x_s ← x in data so that d(x, x_0) ≥ d(y, x_0) for all y in data
x_e ← x in data so that d(x, x_s) ≥ d(y, x_s) for all y in data
v ← (x_e - x_s) / d(x_e - x_s)
H ← ( ‖x'_0 - x‖, ‖x'_1 - x‖, ‖x'_2 - x‖, ..., ‖x'_n - x‖ )
K ← ( ‖x'_0 - x_0‖, ‖x'_1 - x_1‖, ‖x'_2 - x_2‖, ..., ‖x'_n - x_n‖ )
Δ(i, j) = sqrt( (K_i - K_j)^2 + (H_i - H_j)^2 )
for i in {0, 1, 2, 3, ...}:
    Sort { π_0, π_1, ... π_n } = { 0, 1,2, ..., n } so that Δ(i, π_j ) ≤  Δ(i, π_{j+1}) for all j in {0, 1, ... , n-1}
    N_i ← ∅
    for k in {0,1,2, ..., n}:
        if |N_i| < nebSize:
            N_i ← N_i ∪ {π_k}
        else:
            a ← a in N_i with Δ(i, a) ≥ Δ(i, b) for all b in N_i
            if ‖x_a - x‖ > ‖x_{π_k} - x‖:
                N_i ← (N_i / {a}) ∪ {π_k}
            if ‖x_a - x‖ < Δ(π_k , i):
                break loop for k; next x
return (N_0, N_1, N_2, ..., N_n )
```