Stylus state modeler

Up till now we have only used the raw input stream to create a new smoothed stream of positions, leaving behind the pressure attribute. This is what's done here, to model the state of the stylus for these new position based on the pressure data of the raw input strokes.

Algorithm 1: Stylus state modeler

Input :
- input stream with pressure information $\{(p[k] = (x[k], y[k]), \nu[k]), 0 \leq k \leq n\}$
- query position $q = (x, y)$
- search window n_{search} ▷ From stylus_state_modeler_max_input_samples,

1 **initialize** $d = \infty$, index = None, interp = None

2 **for** $i = n - n_{\text{search}}$ to $n - 1$ **do**

3   **Find** q_i the position that's closest to q on the segment $[p[i], p[i+1]]$ and denote $r \in [0, 1]$ the value such that $q_i = (1 - r)p[i] + rp[i+1]$

4   **if** $\|q - q_i\| < d$
    $d \leftarrow \|q - q_i\| < d$

5   index $= i$
        interp $= r$

6   **endif**

7   **endfor**

  calculate

8   $\nu = (1 - r)\nu[\text{index}] + r\nu[\text{index} + 1]$

Output : interpolated pressure ν