Algorithm 1 System fuzzy control logic

$lim \leftarrow \frac{2\theta}{\pi}$
while $e \neq 0$ **do**
  if $lim = 0$ **then**
    run inching for vertical
    monitor IMU displacement
  end if
  if $0 < lim \leq 0.3$ **then**
    inching in standard stationary position
    tensioning off tightening tend, extending tendon giving slack
  end if
  if $1 \leq lim > 0.3$ **then**
    increase holding force on inching unit side away from bend
    tension both tendons to prevent external motor drive
      if $e < 0.1$ **then**
    extend clamps on free inching unit
    check IMU values for inching unit directions
      end if
  end if
  if $lim > 1$ **then**
    give slack on tensioning tendon, tighten extension tendon
    check base IMU for stability
  end if
end while