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**Algorithm 1** Takes a dictionary of  $k$  regions. Calculates the average point of each region, and for each region, it finds the nearest region and draws a line connecting the two average points. Each region is the starting point of one line segment, and each connectivity path self terminates when the last two nodes select each other as the nearest points.

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**Input:** A dictionary of datapoints with keys being region names and value pairs being a list of 2 or 3 dimensional points/nodes.

**Output:** Plotly plot of nodes with connectivity paths.

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1: function CONNECTIVITY(dictionaryregions)
2:   Initialize  $xe = []$                                 ▷ create empty list of x-coordinates for edges
3:   Initialize  $ye = []$                                 ▷ create empty list of y-coordinates for edges
4:   Initialize  $ze = []$                                 ▷ create empty list of z-coordinates for edges
5:   Initialize  $data = []$                                 ▷ create empty list of data points for plotly
6:   Initialize  $avgpt = OrderedDict()$                 ▷ create empty dictionary of region:average point pairs
7:   for  $key$  in  $dictionaryregions$  do                    ▷ loop through all of the regions in the input dictionary
8:     Initialize  $x = []$                                 ▷ create empty list of x-coordinates for nodes
9:     Initialize  $y = []$                                 ▷ create empty list of y-coordinates for nodes
10:    Initialize  $z = []$                                 ▷ create empty list of z-coordinates for nodes
11:    for  $coordinate$  in  $dictionaryregions[key]$  do        ▷ for each coordinate in region
12:      Append  $x,y,z$  values to respective lists            ▷ add  $x,y,z$  to lists
13:    end for
14:     $avgdict[key] = avgpt$                                 ▷ take average of  $x,y,z$  coordinate values and append to
dictionary
15:    Create  $tracescatter = Scatter3d$                     ▷ create plotly 3d scatterplot object
16:    Create  $avgscatter = Scatter3d$                     ▷ create plotly 3d scatterplot object for avg points
17:    for  $key$  in  $enumerate(avgdict)$  do                    ▷ for each region
18:      for  $j$  in  $range(len(avgdict))$  do                    ▷ for each other region
19:        if  $i == j$  then                                ▷ ignore comparisons of same region
20:           $continue$ 
21:        end if
22:         $dist = DISTANCE(ptA, ptB)$                     ▷ compute distance
23:         $distlist.append(dist)$                         ▷ append distances to a list
24:      end for
25:    end for
26:     $min(dist)$                                 ▷ Find closest region
27:  end for
28:   $AppendedgedatatoplotlyScatterobject$                 ▷ Create Plotly Scatter plot object with edges
29:   $plot$ 
30: end function

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