```
library(plotly)
```

volcano is a numeric matrix

```
volcano
```

heatmap

```
fig <- plot_ly(z = volcano, type = "heatmap") fig
```

Contour

```
fig <- plot_ly(z = volcano, type = "contour", contours = list(showlabels = TRUE)) fig <- fig %>% colorbar(title = "Elevation \n in meters")

fig
```

Smoothing Contour Lines

```
fig1 <- plot_ly(z = volcano, type = "contour", contours = list(showlabels = TRUE), line = list(smoothing = 0.85)) fig1 <- fig1 %>% colorbar(title = "Elevation \n in meters")

fig2 <- subplot(fig,fig1)

fig2
```

greyscale

```
fig <- plot_ly(z = volcano,colors = "Greys", type = "heatmap") fig
```

single color

```
vals <- unique(scales::rescale(c(volcano))) o <- order(vals, decreasing = FALSE) cols <- scales::col_numeric("Oranges", domain = NULL)(vals) colz <- setNames(data.frame(vals[o], cols[o]), NULL) fig <- plot_ly(z = volcano, colorscale = colz, type = "heatmap") fig
```

multi

```
fig <- plot_ly(z = volcano, colors = colorRamp(c("Black","Red","orange")), type = "heatmap")

fig
```

density plot

```
dens <- with(diamonds, tapply(price, INDEX = cut, density)) df <- data.frame( x = unlist(lapply(dens, "[[", "x")), y = unlist(lapply(dens, "[[", "y")), cut = rep(names(dens), each = length(dens[[1]]$x)) )

fig <- plot_ly(df, x = ~x, y = ~y, color = ~cut) fig <- fig %>% add_lines() fig
```

3d surface

plot_ly(z = matrix(1:100, nrow = 10)) %>% add_surface()

3d surface plot

```
fig <- plot_ly(z = ~volcano,type = 'surface') fig
```

Surface Plot With Contours

```
fig <- plot_ly(z = ~volcano) %>% add_surface( contours = list( z = list( show=TRUE, usecolormap=TRUE, highlightcolor="#ff0000", project=list(z=TRUE) ) ) ) fig <- fig %>% layout( scene = list( camera=list( eye = list(x=1.87, y=0.88, z=-0.64) ) ) )

fig
```

Multiple Surfaces

```
z <- c( c(8.83,8.89,8.81,8.87,8.9,8.87), c(8.89,8.94,8.85,8.94,8.96,8.92), c(8.84,8.9,8.82,8.92,8.93,8.91), c(8.79,8.85,8.79,8.9,8.94,8.92), c(8.79,8.88,8.81,8.9,8.95,8.92), c(8.8,8.82,8.78,8.91,8.94,8.92), c(8.75,8.78,8.77,8.91,8.95,8.92), c(8.8,8.8,8.77,8.91,8.95,8.94), c(8.74,8.81,8.76,8.93,8.98,8.99), c(8.89,8.99,8.92,9.1,9.13,9.11), c(8.97,8.97,8.91,9.09,9.11,9.11), c(9.04,9.08,9.05,9.25,9.28,9.27), c(9,9.01,9,9.2,9.23,9.2), c(8.99,8.99,8.98,9.18,9.2,9.19), c(8.93,8.97,8.97,9.18,9.2,9.18) ) dim(z) <- c(15,6) z2 <- z + 1 z3 <- z - 1

fig <- plot_ly(showscale = FALSE) fig <- fig %>% add_surface(z = ~z) fig <- fig %>% add_surface(z = ~z2, opacity = 0.98) fig <- fig %>% add_surface(z = ~z3, opacity = 0.98)

fig
```

3d streamtube plot

df = read.csv('Dataset/streamtube-wind.csv')

df = read.csv('https://raw.githubusercontent.com/plotly/datasets/master/streamtube-wind.csv')

fig <- df %>% plot_ly(type = 'streamtube', x = ~x, y = ~y, z = ~z, u = ~u, v = ~v, w = ~w, sizeref = 0.5, cmin = 0, cmax = 3) fig <- fig %>% layout(scene = list(camera = list(eye = list(x = -0.7243612458865182, y = 1.9269804254717962, z = 0.6704828299861716)

```
    )
)
```

)

fig

Starting Position and Segments

fig <- df %>% plot_ly(type = 'streamtube', x = ~x, y = ~y, z = ~z, u = ~u, v = ~v, w = ~w, starts = list(x = rep(80, 16), y = rep(c(20,30,40,50), 4), z = c(rep(0,4),rep(5,4),rep(10,4),rep(15,4))), sizeref = 0.3, showscale = F, maxdisplayed = 3000) fig <- fig %>% layout(scene = list(aspectratio = list(x = 2, y = 1, z = 0.3)), margin = list(t = 20, b = 20, l = 20, r = 20))

fig