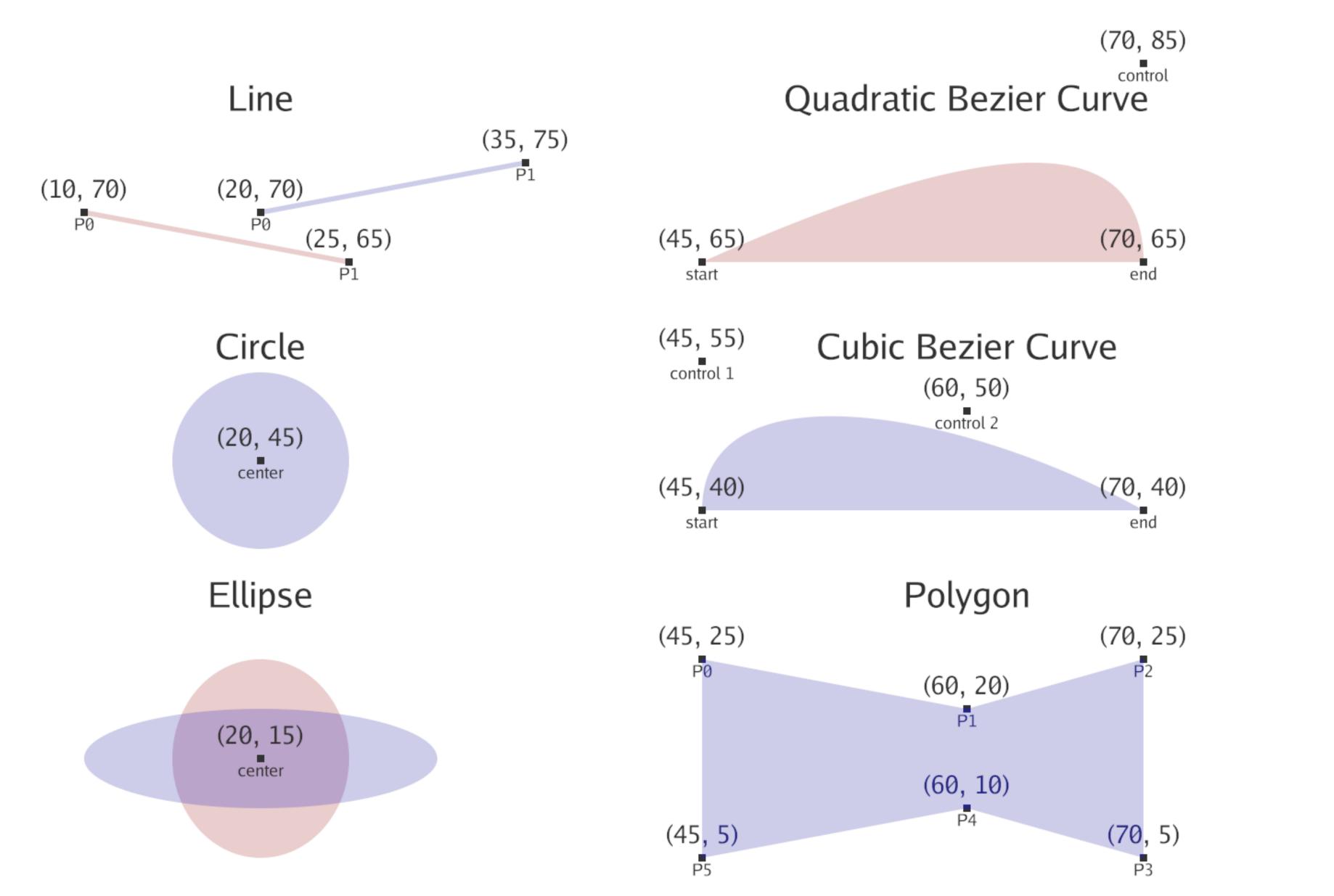
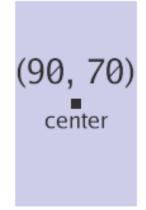


A canvas API for Gio applications using high-level objects and a percentage-based coordinate system (https://github.com/ajstarks/giocanvas)



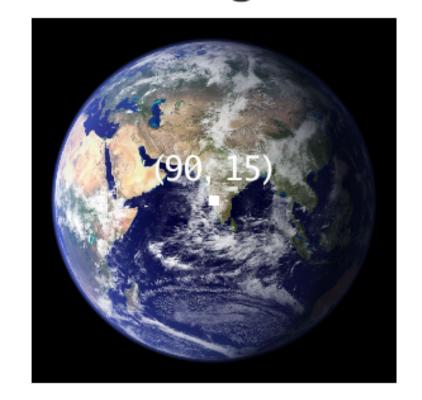
Rectangle



Square



Image

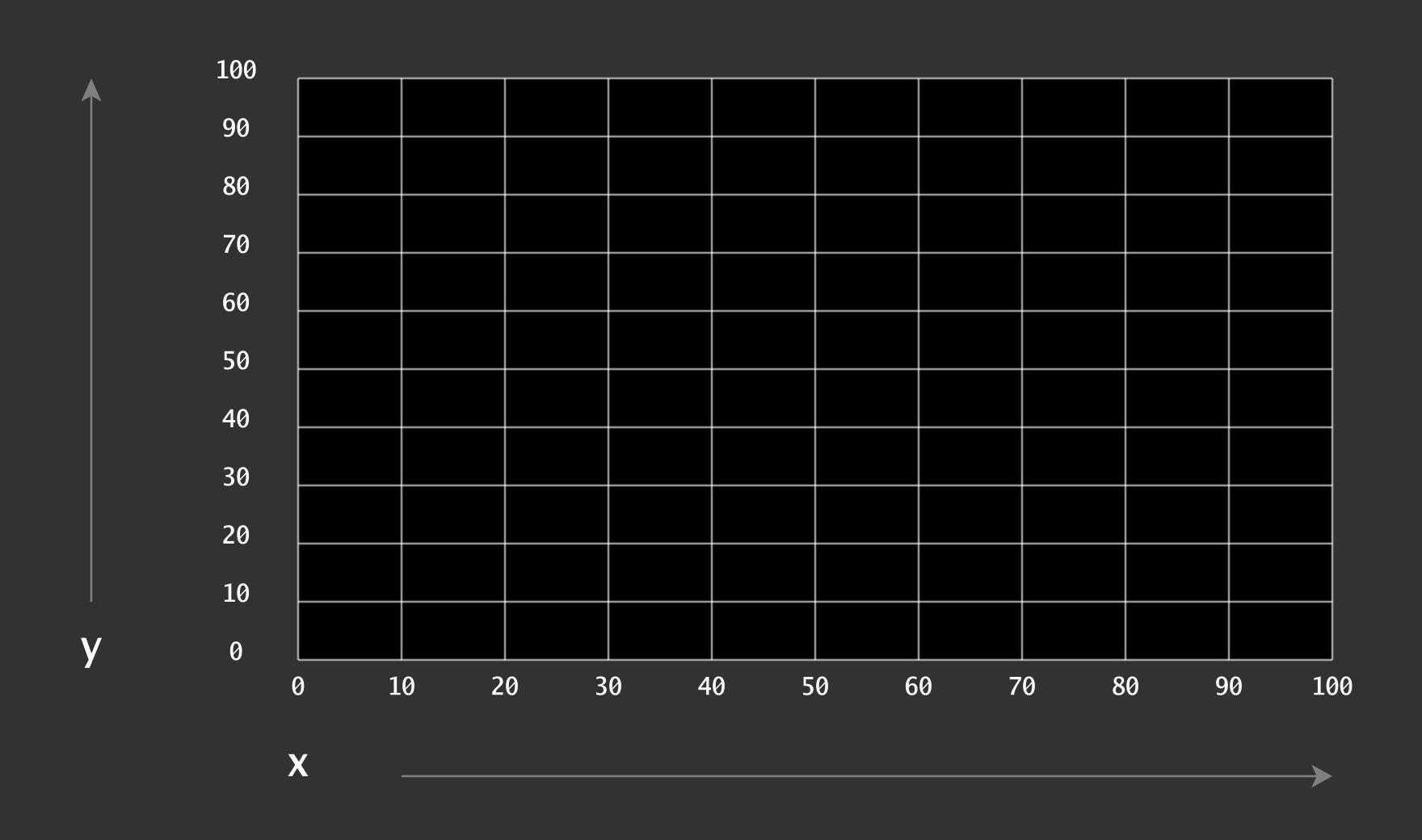


Motivation

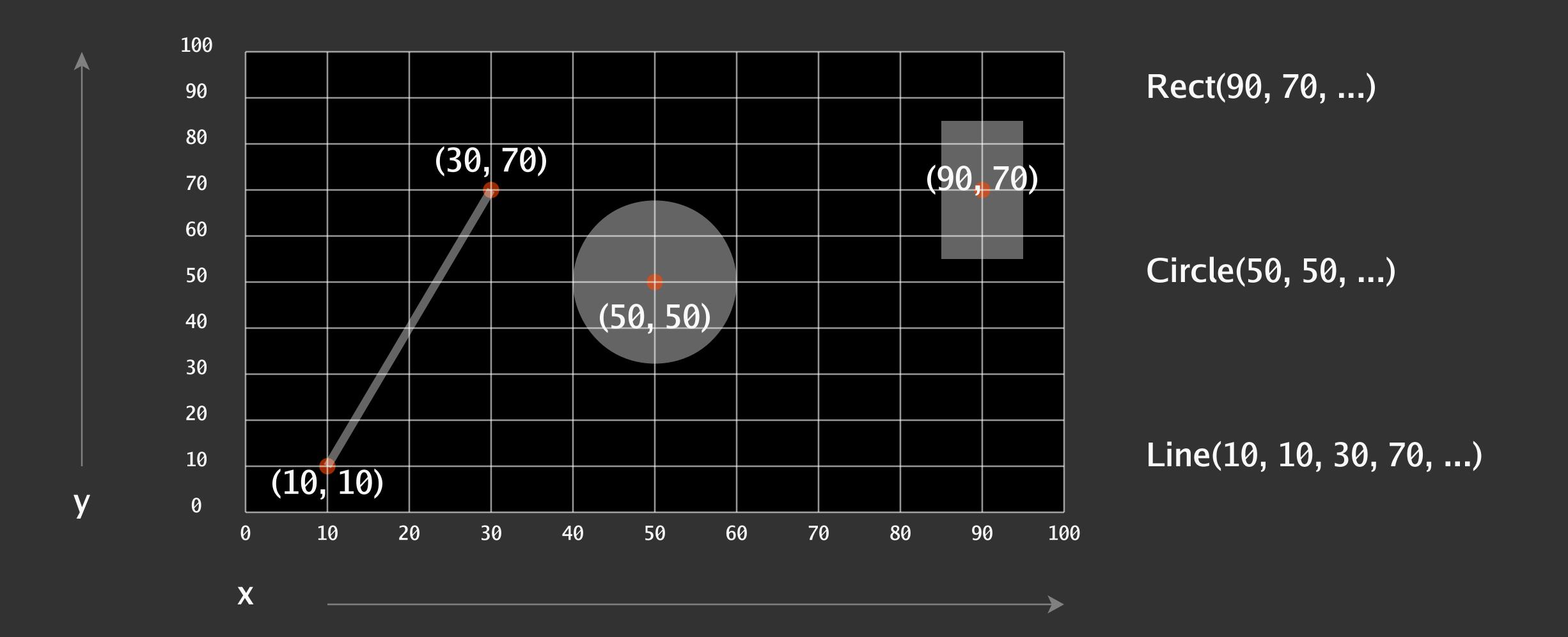
The desire for a high-level Go API for developers and designers to think in terms of high level objects that make up a visual display. The objects will be familiar to anyone using a modern illustration program (text, images, lines, arcs, circles, curves, etc). The API should facilitate the artful arrangement of these elements on a scalable 2D canvas.

Use Cases: Information Displays, Data Visualization, Creative Coding, Presentations

The Percent Grid



Using the Percent Grid



Methods on *Canvas

Make a new canvas NewCanvas (width, height float32, e system.FrameEvent) *Canvas Place an image from file Image (name string, x, y float32, w, h int, scale float32) Place an image from image.Image Img (im image.Image, x, y float32, w, h int, scale float32) Line from (x0,y0) to (x1,y1)Line (x0, y0, x1, y1, size float32, stroke color.RGBA) Circle centered at (x,y), radius r Circle (x, y, r float32, fill color.RGBA) Ellipse centered at (x,y), radii (w,h) Ellipse (x, y, w, h float32, fill color.RGBA) Square centered at (x,y) Square (x, y, w float32, fill color.RGBA) Rectangle centered at (x,y) CenterRect (x, y, w, h float32, fill color.RGBA) Rectangle upper-left at (x,y) CornerRect (x, y, w, h float32, fill color.RGBA) **Cubic Bezier Curve** CubeCurve (x, y, cx1, cy1, cx2, cy2, ex, ey float32, fill color.RGBA) **Quadratic Bezier Curve** Curve (x, y, cx, cy, ex, ey float32, fill color.RGBA) Filled Polygon Polygon (x, y []float32, fill color.RGBA) Left-Aligned Text Text (x, y, size float32, s string, fill color.RGBA) **Centered Text** CText (x, y, size float32, s string, fill color.RGBA)

EText (x, y, size float32, s string, fill color.RGBA)

End-Aligned Text

Transformations and Convenience Functions

Rotate at (x,y) around angle

Scale at (x,y) by factor

Shear at (x,y) by angle1, angle2

Translate by (x,y)

End Transformation

Map one range to another
Show annotated coordinates
Set the background color
Show a grid
Polar to Cartesian (radians)
Polar to Cartesian (degrees)

Rotate (x, y, angle float32) op.StackOp Scale (x, y, factor float32) op.StackOp Shear (x, y, ax, ay float32) op.StackOp Translate (x, y float32) op.StackOp EndTransform(stack op.StackOp)

MapRange (value, low1, high1, low2, high2 float64) float64

Coord (x, y, size float32, s string, fill color.RGBA)

Background (fill color.RGBA)

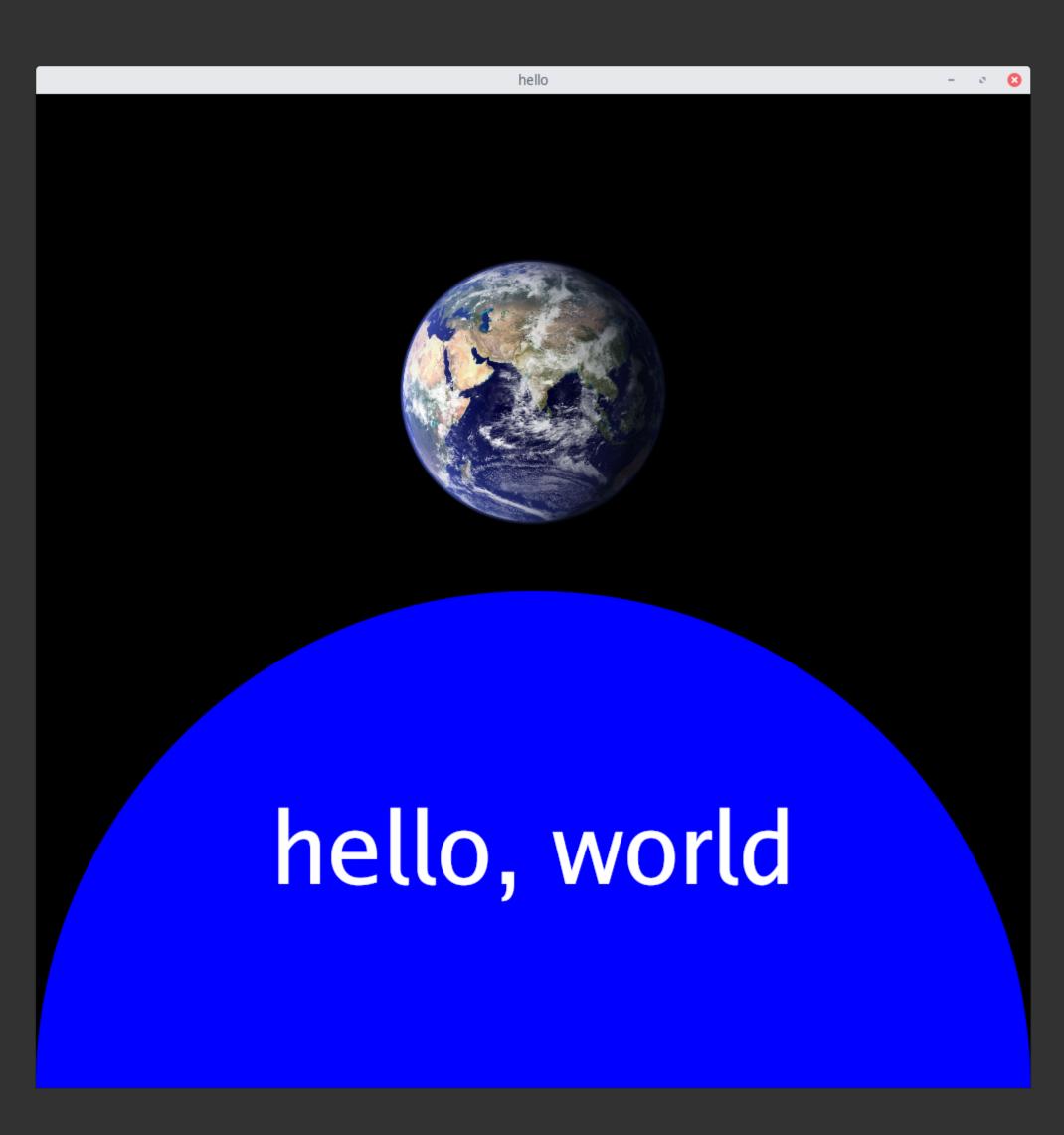
Grid (x, y, w, h, size, interval float32, linecolor color.RGBA)

Polar (cx, cy, r, theta float32) (float32, float32)

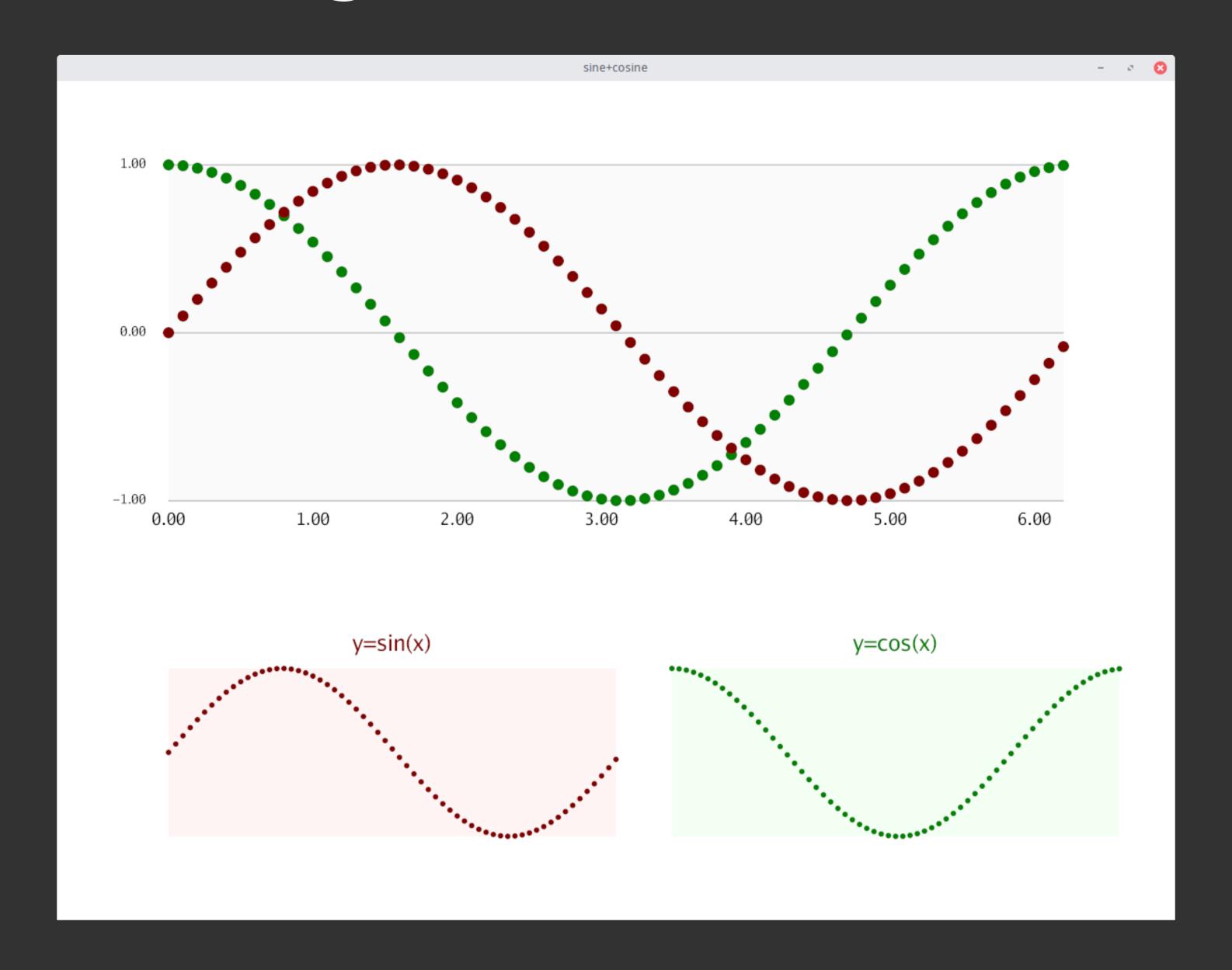
PolarDegrees(cx, cy, r, theta float32) (float32, float32)

giocanvas hello, world

```
package main
import (
    "gioui.org/app"
    "gioui.org/io/system"
    "gioui.org/unit"
    gc "github.com/ajstarks/giocanvas"
func hello(title string, width, height float32) {
    win := app.NewWindow(app.Title(title), app.Size(unit.Px(width), unit.Px(height)))
    for e := range win.Events() {
        switch e := e.(type) {
        case system.FrameEvent:
           canvas := gc.NewCanvas(width, height, e)
            canvas.CenterRect(50, 50, 100, 100, gc.ColorLookup("black"))
           canvas.Circle(50, 0, 50, gc.ColorLookup("blue"))
            canvas.TextMid(50, 20, 10, "hello, world", gc.ColorLookup("white"))
            canvas.CenterImage("earth.jpg", 50, 70, 1000, 1000, 30)
           e.Frame(canvas.Context.Ops)
func main() {
    go hello("hello", 1000, 1000)
    app.Main()
```



giocanvas/chart



giocanvas/chart data structures

```
// NameValue is a name, value pair
type NameValue struct {
   label string
   note string
   value float64
// ChartBox holds the essential data for making a chart
type ChartBox struct {
   Title
                             string
                             []NameValue
   Data
   Color
                             color.RGBA
    Top, Bottom, Left, Right float64
   Minvalue, Maxvalue
                            float64
   Zerobased
                            bool
```

methods on *ChartBox

Read data int ChartBox

func DataRead(r io.Reader) (ChartBox, error)

Bar Chart

Horizontal Bar Chart

Line Chart

Area Chart

Scatter Chart

Centered Title

Chart Frame

X Axis Label

Y axis

```
Bar (canvas *gc.Canvas, size float64)
HBar (canvas *gc.Canvas, size, linespacing, textsize float64)
Line (canvas *gc.Canvas, size float64)
Area (canvas *gc.Canvas, opacity float64)
```

Scatter (canvas *gc.Canvas, size float64)

CTitle (canvas *gc.Canvas, size, offset float64)

Frame (canvas *gc.Canvas, op float64)

Label (canvas *gc.Canvas, size float64, n int)

YAxis (canvas *gc.Canvas, size, min, max, step float64,

format string, gridlines bool)

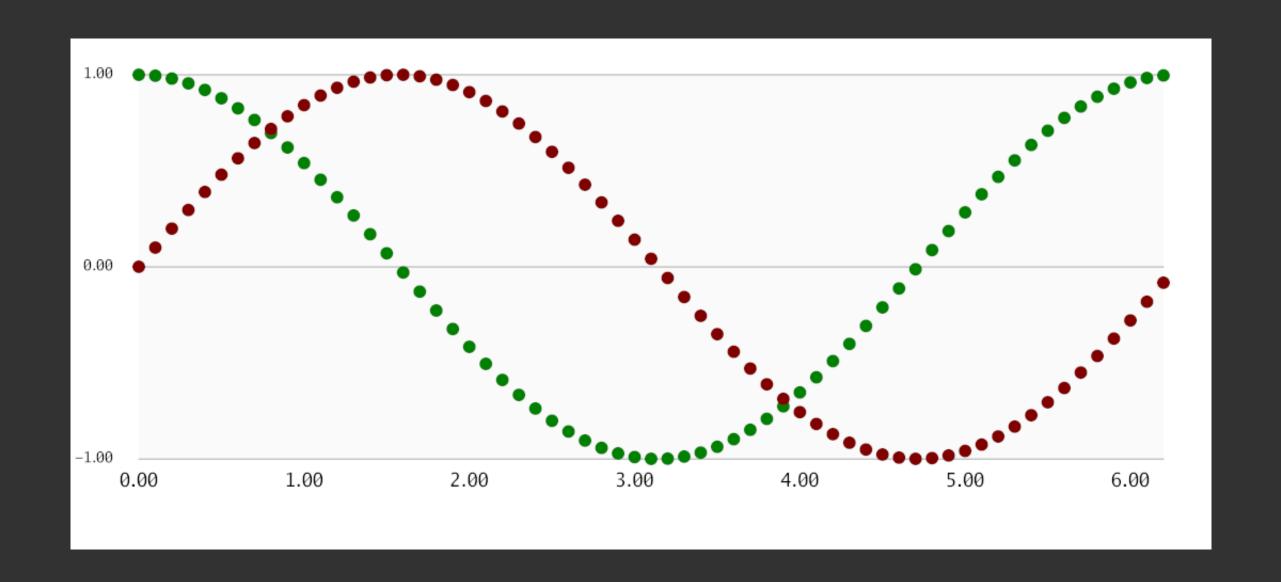
giocanvas/chart: read data

```
sr, err := os.Open("sin.d")
if err != nil {
   return err
cr, err := os.Open("cos.d")
if err != nil {
    return err
sine, err := chart.DataRead(sr)
if err != nil {
   return err
cosine, err := chart.DataRead(cr)
if err != nil {
   return err
```

| <pre># y=sin(x)</pre> | | <pre># y=cos(x)</pre> | |
|-----------------------|---------|-----------------------|--------|
| 0.00 | 0.0000 | 0.00 | 1.0000 |
| 0.10 | 0.0998 | 0.10 | 0.9950 |
| 0.20 | 0.1987 | 0.20 | 0.9801 |
| 0.30 | 0.2955 | 0.30 | 0.9553 |
| 0.40 | 0.3894 | 0.40 | 0.9211 |
| 0.50 | 0.4794 | 0.50 | 0.8776 |
| 0.60 | 0.5646 | 0.60 | 0.8253 |
| 0.70 | 0.6442 | 0.70 | 0.7648 |
| 0.80 | 0.7174 | 0.80 | 0.6967 |
| 0.90 | 0.7833 | 0.90 | 0.6216 |
| 1.00 | 0.8415 | 1.00 | 0.5403 |
| • • • | | • • • | |
| 6.00 | -0.2794 | 6.00 | 0.9602 |
| 6.10 | -0.1822 | 6.10 | 0.9833 |
| 6.20 | -0.0831 | 6.20 | 0.9965 |

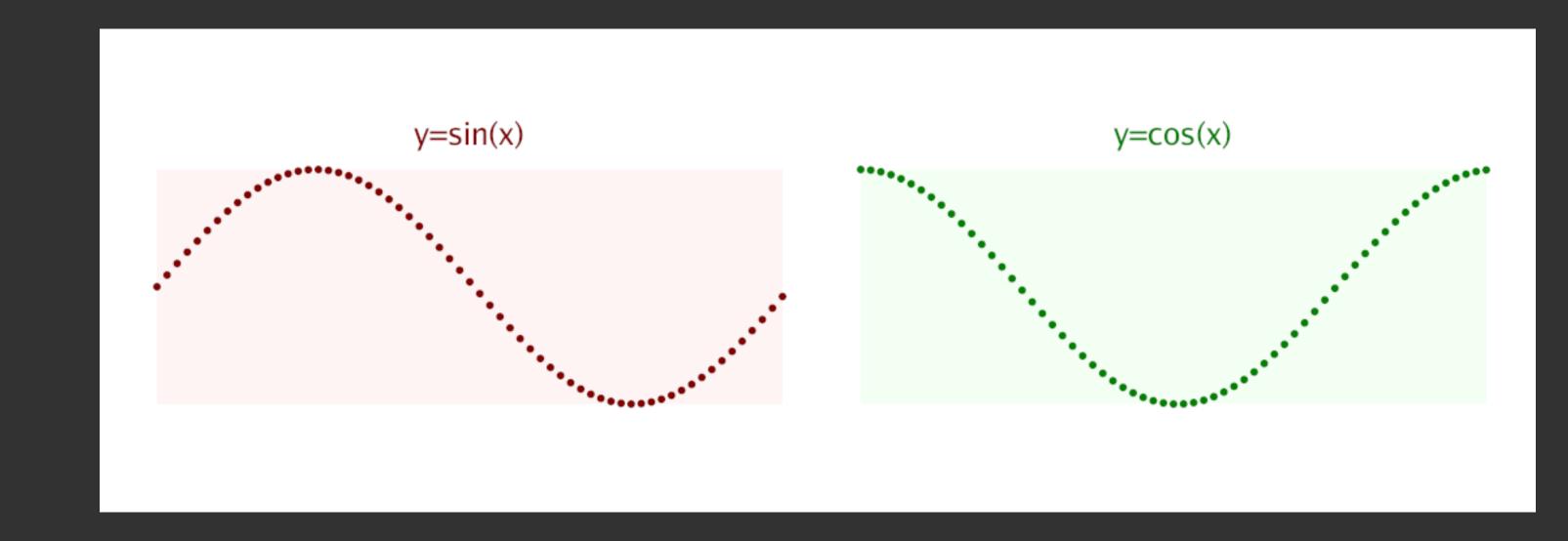
giocanvas/chart: composite charts

```
cosine.Zerobased = false
sine.Zerobased = false
cosine.Frame(canvas, 5)
sine.Label(canvas, 1.5, 10)
cosine.YAxis(canvas, 1.2, -1.0, 1.0, 1.0, "%0.2f", true)
cosine.Color = color.RGBA{0, 128, 0, 255}
sine.Color = color.RGBA{128, 0, 0, 255}
cosine.Scatter(canvas, 0.5)
```



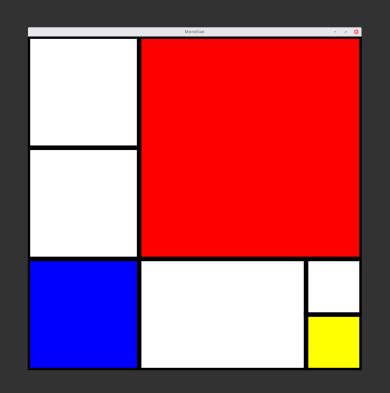
giocanvas/chart: side by side

```
sine.Left = 10
sine.Right = sine.Left + 40
sine.Top, cosine.Top = 30, 30
sine.Bottom, cosine.Bottom = 10, 10
sine.CTitle(canvas, 2, 2)
sine.Frame(canvas, 10)
sine.Scatter(canvas, 0.25)
offset := 45.0
cosine.Left = sine.Left + offset
cosine.Right = sine.Right + offset
cosine.CTitle(canvas, 2, 2)
cosine.Frame(canvas, 10)
cosine.Scatter(canvas, 0.25)
```

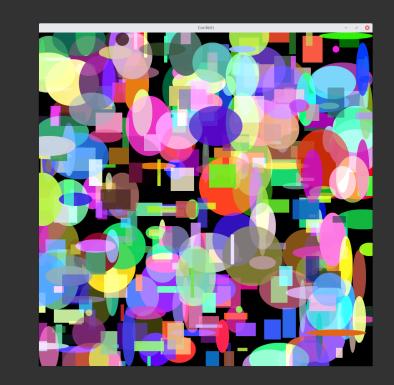


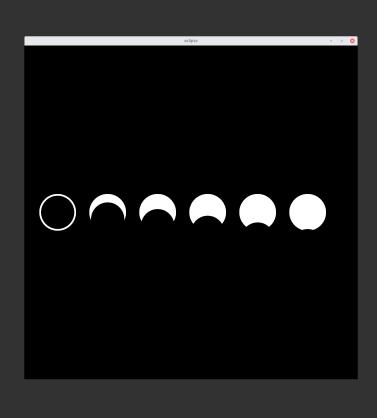
Clients

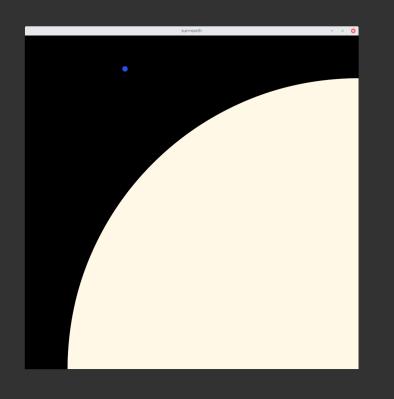


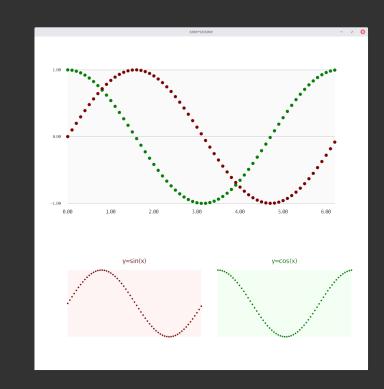


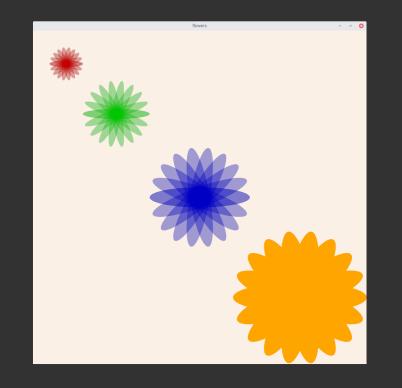




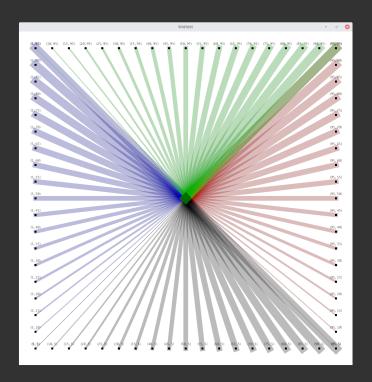


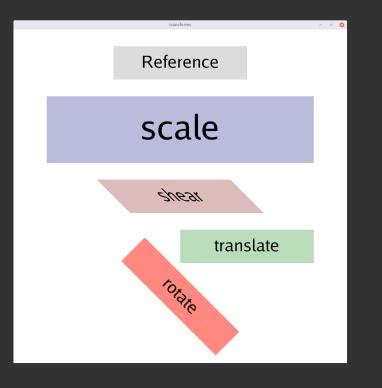


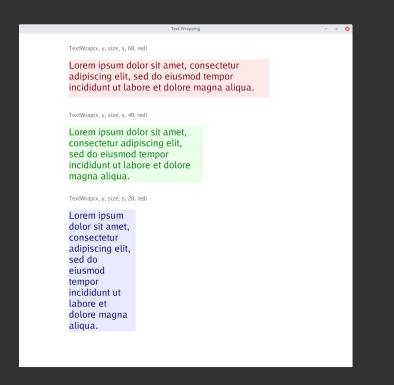












go get it

github.com/ajstarks/giocanvas