

# Generative Art with Racket

Sixth RacketCon - Rodrigo Setti

# Agenda

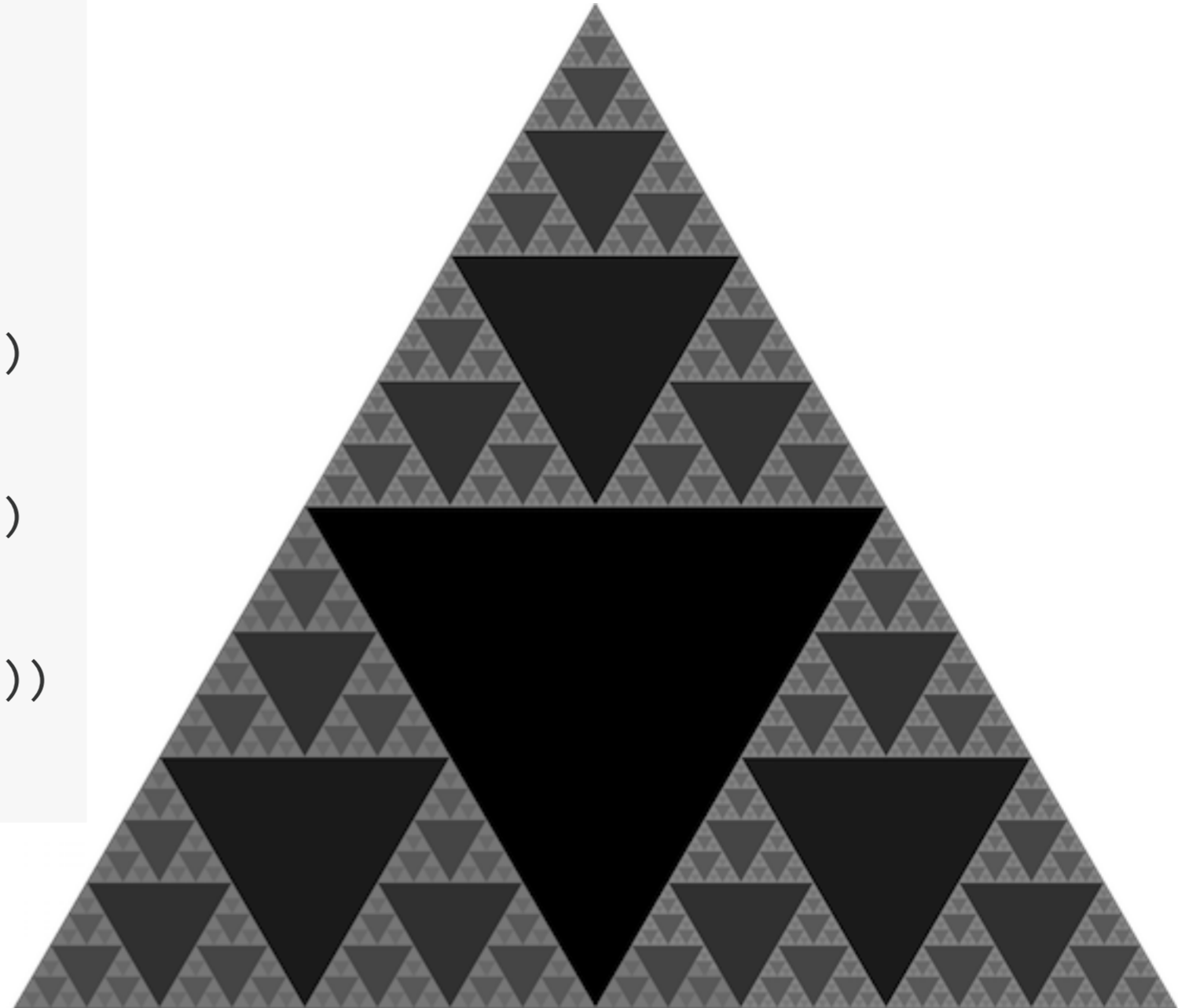
1. Demo
2. System Design
3. My Experience

demo

```
#lang s-exp stamps/lang
```

```
(define-shape sierp  
  (triangle)  
  (sierp [translate 0 0.288]  
         [scale 0.5]  
         [brightness 0.1]))  
  (sierp [translate -0.25 -0.144]  
         [scale 0.5]  
         [brightness 0.1]))  
  (sierp [translate 0.25 -0.144]  
         [scale 0.5]  
         [brightness 0.1]))))
```

```
(start-shape sierp)
```



```

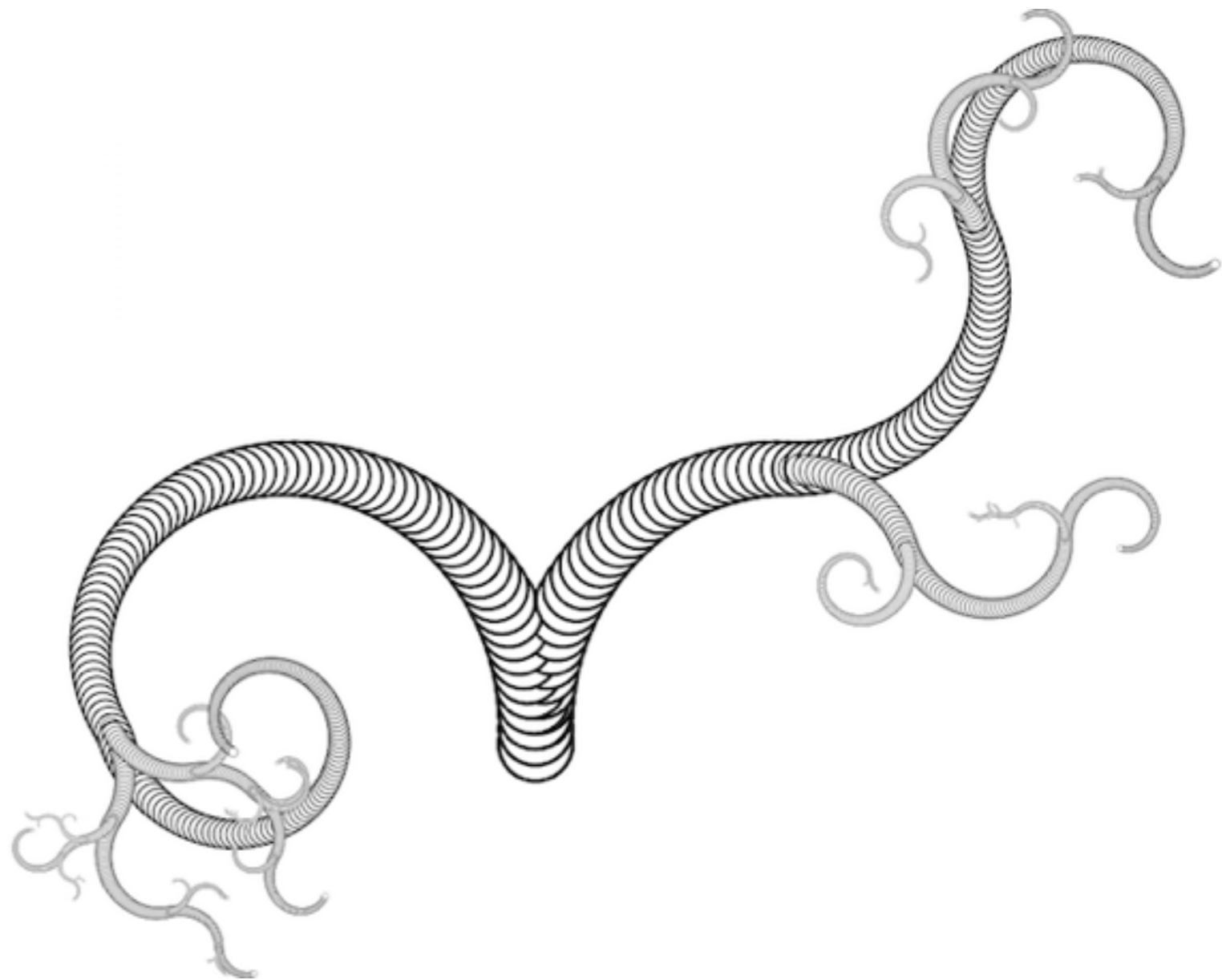
#lang s-exp stamps/lang

(define-shape tree
  (branch)
  (branch [flip 90]))

(define-shape branch
  [98 =>
   (circle)
   (circle [scale 0.9]
            [brightness 1])
   (branch [y 0.2]
            [scale 0.99]
            [rotate 3])]
  [2 =>
   (circle)
   (circle [scale 0.9]
            [brightness 1])
   (branch [y 0.2]
            [scale 0.99]
            [flip 90])
   (branch [y 0.2]
            [scale 0.6]
            [brightness 0.2])])

(start-shape tree)

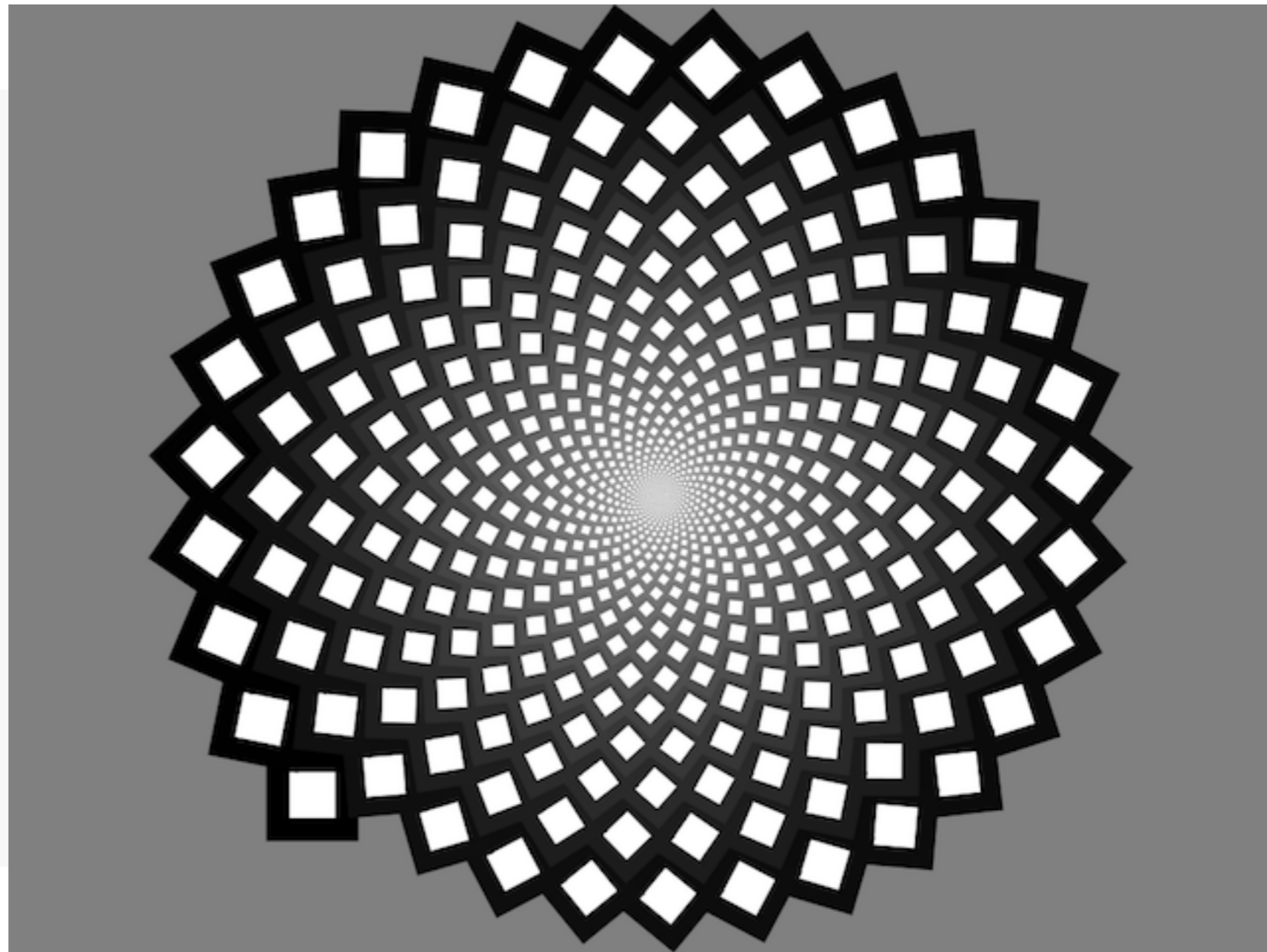
```



```
#lang s-exp stamps/lang
```

```
(define-shape S  
  (square)  
  (square [s 0.5 ]  
          [b 1 ]))  
(S [r .2 ]  
   [t .7 .7]  
   [s .995 ]  
   [b .002 ]))
```

```
(background '(0 0 .5))  
(start-shape S)
```



```

#lang s-exp stamps/lang

(define-shape start
  ((stem 8) [h 300]))

(define-shape (stem branches)
  ((loop ([i branches])
    ((branch (random-real -6 6)) [x .1]
      [r (* i (/ branches 360))]
      [s .7])))

(define-shape (branch turn)
  [1 => (circle [sat .4])
    ((branch turn) [x .1 ]
      [s .99 ]
      [r turn]
      [b .01 ])]

  [.1 => ((branch (random-real -6 6)))]
  [.04 => ((stem (random-integer 1 4)))]
  [.001 => ])

(background '(0 0 0))
(maximum-render-cycles 100000)
(start-shape start)

```



# System Design

language

`#%module-begin`

macros

`define-shape`

shape combinators

**join** : `map[probability, shape] → shape`

shape “core”

**shape** : `adjustment → renderer`

**renderer** : `device-context → list[renderer]`



# My Experience

## **What is Great**

- DrRacket
- Documentation
- Packages
- Macro and language system
- Typed racket
- Profiling

## **Areas for Improvement**

- Untyped matrix performance

thank you

[github.com/rodrigsetti/stamps](https://github.com/rodrigsetti/stamps)