

# Your Simulated Formalized Life=game

—— A visual simulator of a specialized  
kind of cellular automata





HELLO.

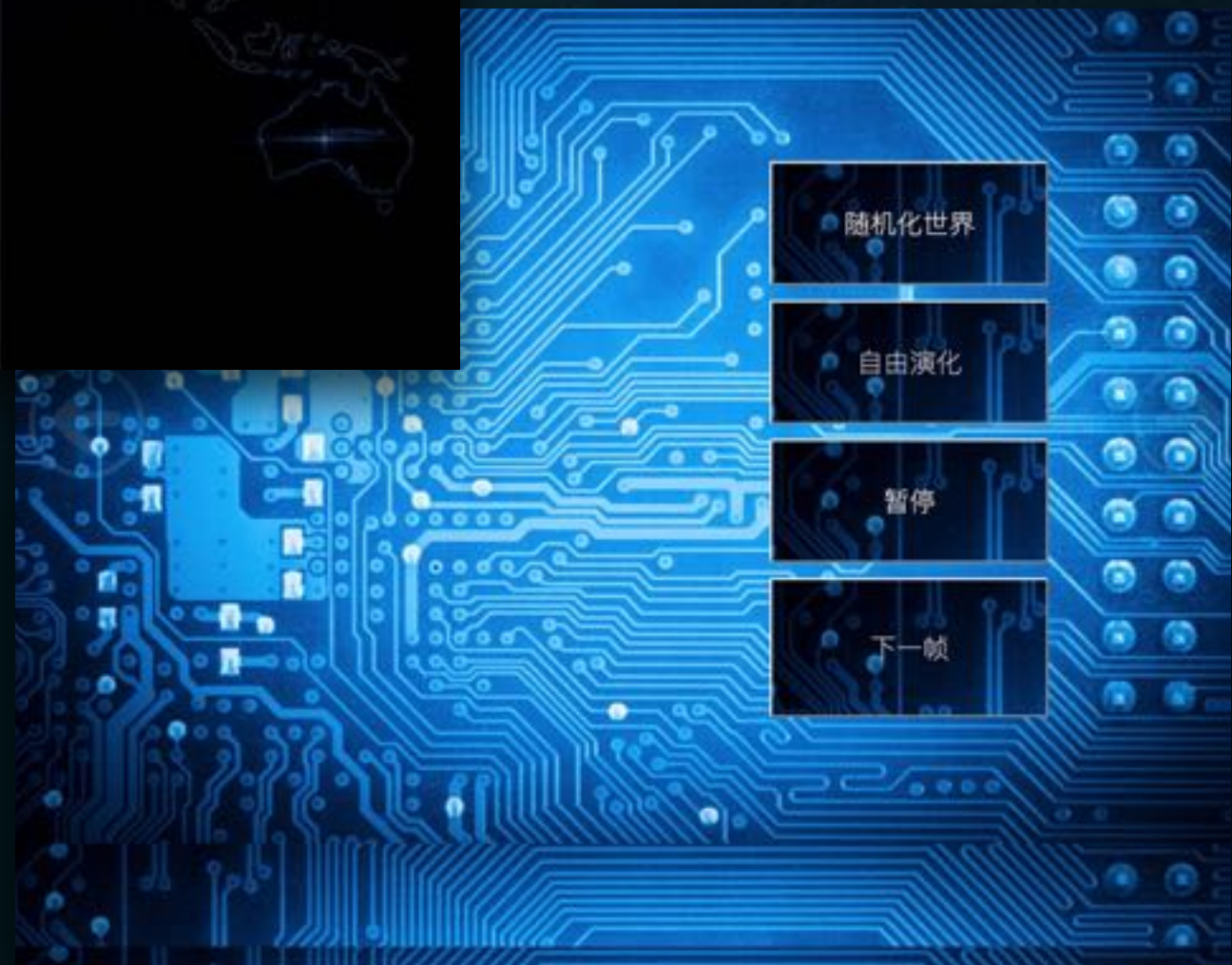
WELCOME TO OUR WORLD!

# World Components



World Size:  
100 \* 100 pixels

Life State:  
0~die 1~alive





# Life Properties



DNA : A\*T\*G\*C\*



Horizon:  $x$  ( $x \in [1, 10]$ )



DNA  
interpreter

# Life Rules

If

TTC

TTT

Equals

TTA

CTA

CTC

TTG

CTT

CTG

Detect

ATA

ATC

ATT

ATG

born

TCA

TCT

TCC

TCG

die

CCA

CCT

CCC

CCG

still

ACA

ACT

ACC

ACG

1

2

3

4

5

6

7

8

9

10

GTX

GCX

TAX

CAX

AAX

GAX

TGX

CGX

AGX

GGX

$X \in \{A, T, C, G\}$

# Life Rules

```
If (bool x, state y, state z) :
```

```
Equals (int x, int y)
```

```
Detect(int x)
```

```
return y (x = 1)
```

```
return z (x = 0)
```

```
return 1 (x = y)
```

```
return 0 (x != y)
```

```
return (number of lives within horizon(x))
```



Examples : (Initial DNA Sequences)

```
TTT TTG ATA GTA TAT TCT CCG
```

```
If ( equals ( detect(1), 3), born, die)
```

```
TTT TTG ATA GTA GCT ACA TTC TTG ATT GTT TAT TCC CCA
```

```
if ( equals ( detect ( 1 ) , 2 ) , still , if ( equals ( detect ( 1 ) , 3 ) , born, die ) )
```



# Generic Mutation



MUTANT CELL



MUTATION TYPES

1. SUBSTITUTION
2. DUPLICATION

MUTATION RATE

1/10000

MUTATION RESULTS

- CHANGE OF HORIZON
- LIVING CONDITION
- COMPILE ERROR (DIE)

# Special Paradigm



#1-IMMORTALIZED CELL

由于新诞生细胞的DNA编号规则为：取视野范围8个格子里面非0格DNA代号的算术平均，当一个细胞演化为永生型时，该类细胞将会持续繁殖占据大部分世界区域。而此时我们也可以看到一些无法蔓延的“真空地带”，这些地带存在着具有抗原属性的一些细胞。



#2-EQUILIBRIUM STATE

当有效突变未发生时，固定的生存规则下会有一些稳态集群，即形态永恒不变或周期性变化。比较经典的一些图案有：2\*2正方形，十字架，脉冲星、滑翔机





# GROUP MEMBER



YOU ZHIYU

游志宇

YOUR

SHENG PEIYAO

盛佩瑤

SIMULATED

FANG ZHIYONG

方智涌

FORMALIZED

LU SIDI

盧思迪

LIFE-GAME

LIV SIQI

劉思柒

2016.06.18