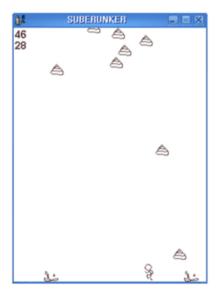


S Q C S

Sungkyunkwan university Quantum Computing & Science

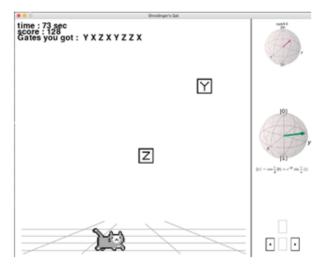
1. Introduction

Inspiration Quantization of SUBERUNKER "



Simple Classics games

"Avoid my poop!"

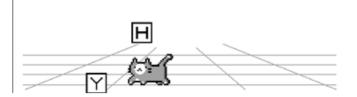


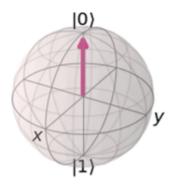
Simple Quantum games

"Get proper Q-gates!"

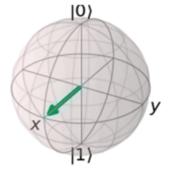
How to play "Get proper Q gates to make target states"

time: 41 sec score: 62 Gates you got: HYZZHTSZSZY





Present states

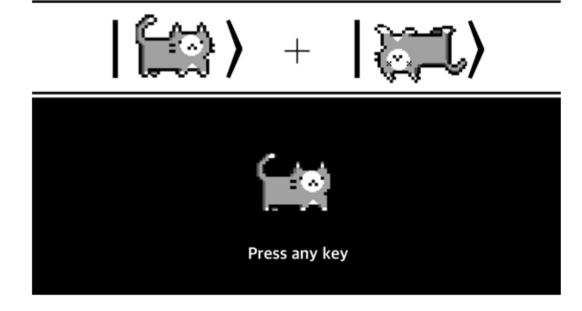


 $|\psi\rangle = |+\rangle$

"Target states

How to play "To 0 or not To 0 that is the problem"

time : 59 sec score : 92 Gates you got :





"Superposed"

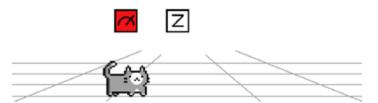
How to play "To 0 or not To 0 that is the problem"

time : 59 sec score : 92 Gates you got :



"Collapsed to one of the states"





Materialzation

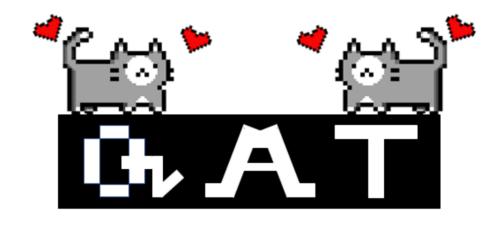
"pygame"

```
def play_game(self):
✓ Im backup
                                        self.screen.blit(background_in_game, (0,8))
                                        bgm.play(-1)
                                        self.is_gaming = True
                                         while self.is_gaming:
      Died background.on
                                            for event in pygame.event.get():
     Horizon.mp3
                                                if event.type == pygame.KEYDOWN:
  > Im target state
                                                        self.catDirection = -1
  A README.md
Ille External Libraries
                                                    if event.key == pygame.K_RIGHT:
To Scratches and Consoles
                                                         cat.attack(self.key_left)
                                                if event.type == pygame.KEYUP:
                                                         self.catDirection = 0
                                            self.__cat_position_info_update()
                                            self.__gate_position_info_update()
```

Materialzation

"Qiskit"

```
if gate_num == 2:
    if self.gate2_kind == "X":
        self.qc.x(0)
    if self.gate2_kind == "Y":
        self.qc.y(0)
    if self.gate2_kind == "Z":
        self.qc.z(0)
    if self.gate2_kind == "H":
        self.qc.h(0)
    if self.gate2_kind == "S":
        self.qc.s(0)
    if self.gate2_kind == "T":
        self.qc.t(0)
    if self.gate2_kind == "S+":
        self.qc.sdg(0)
    if self.gate2_kind == "T+":
        self.qc.tdg(0)
# print(self.gate_string)
# print(self.qc)
# print(self.gate1_kind, self.gate2_kind)
qc_init = self.qc.copy()
qc_init.save_statevector()
statevector = sim.run(qc_init).result().get_statevector()
```



Thanks