Creative Algorithms

Test Your Sense of Timing

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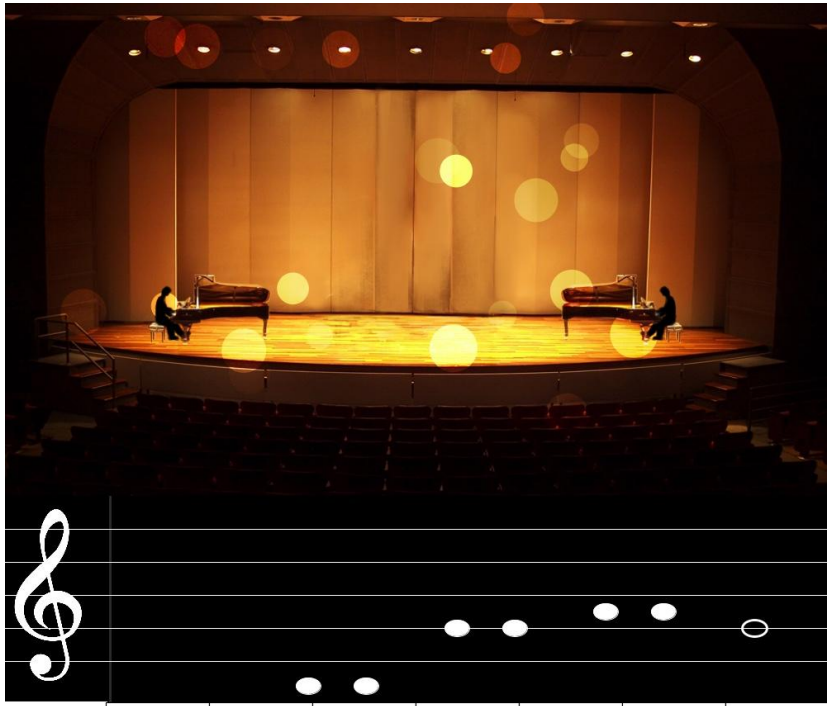
1. Project Description

Main Screen of The Project

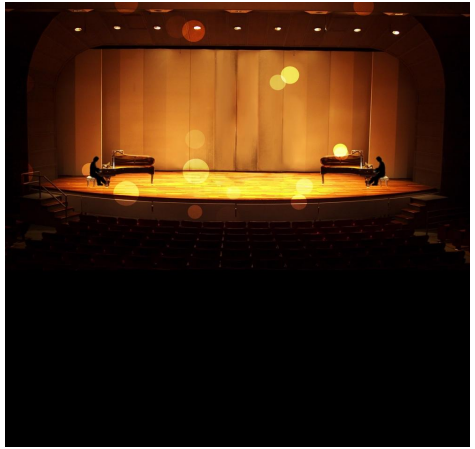


How To Play The Game

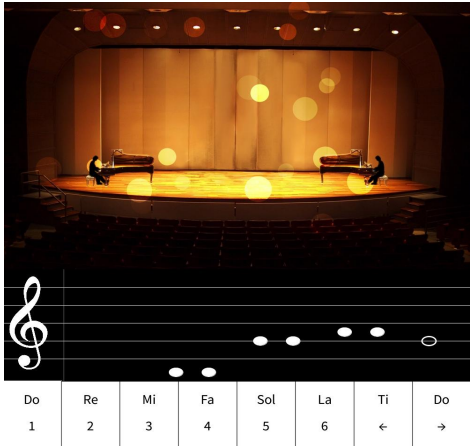
Users can start the game

or

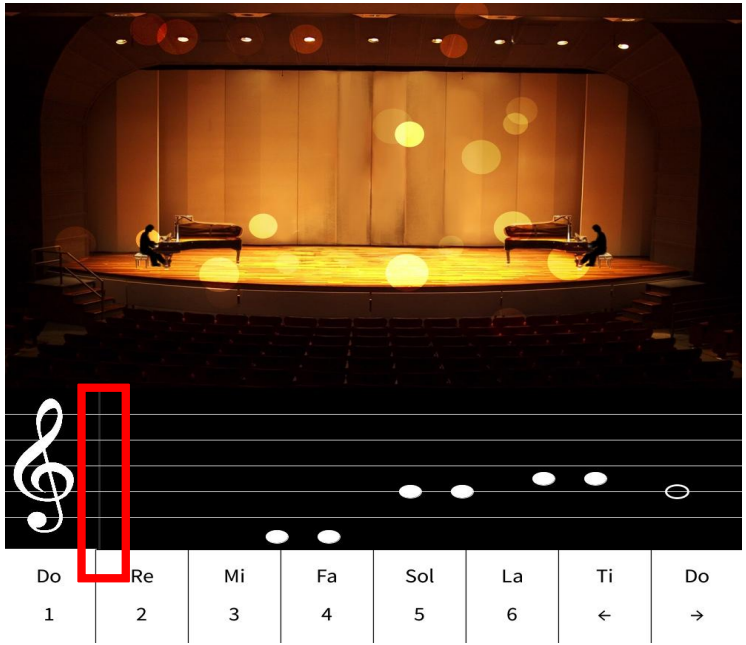
Record their own music (loop station)



The stage appears when users press “space” key

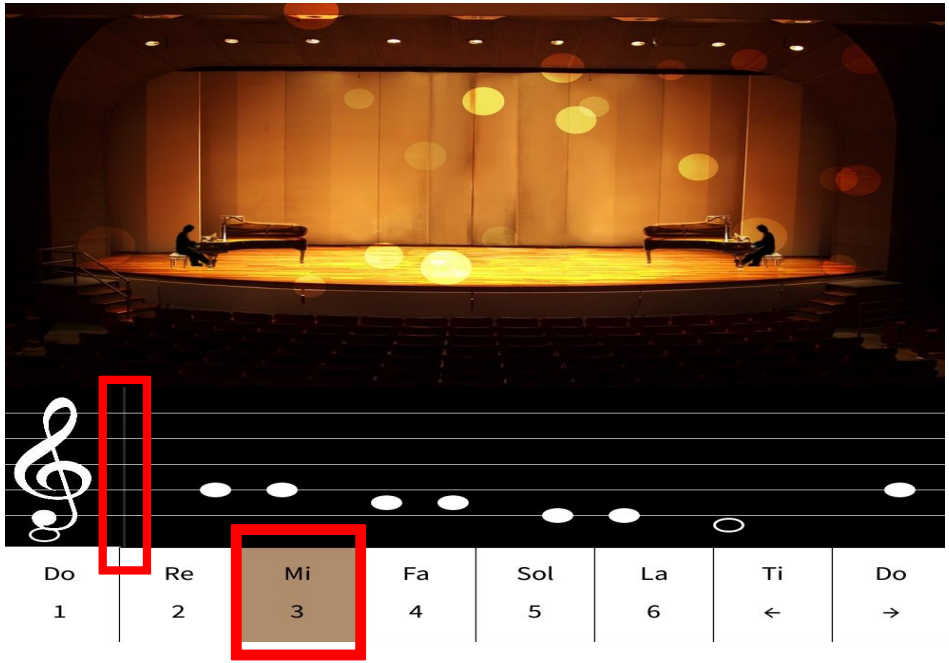


The game starts when users press “s” key (Notes appear)



 # 1

When a note touches the line, the user needs to play that note by keyboard or smartphone

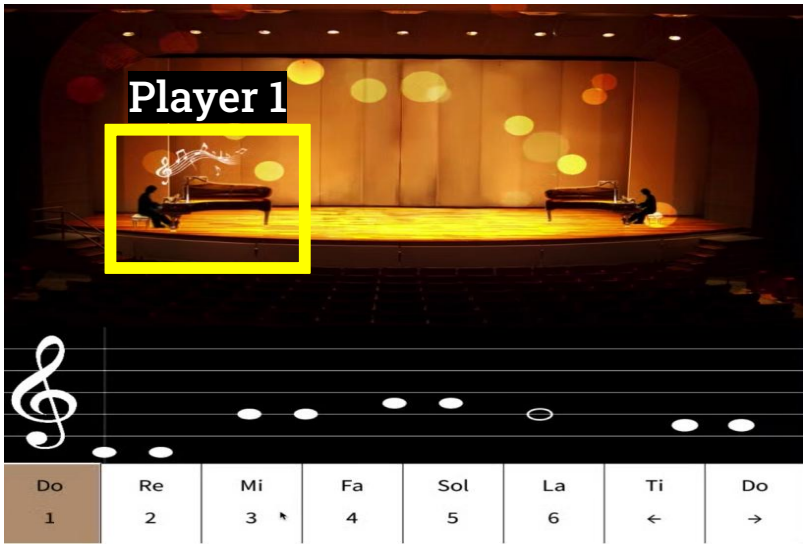


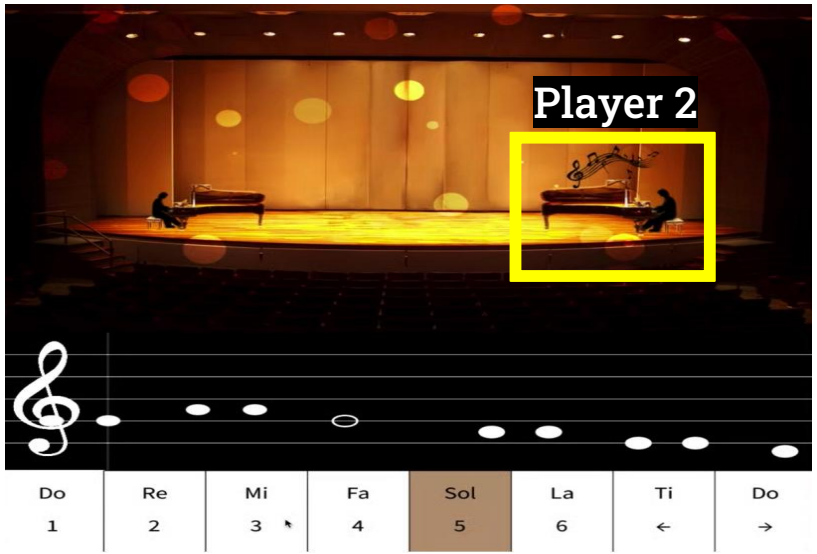
 # 2

Nothing happens if the timing for playing is incorrect.

Do, Re, Mi, Fa, Sol, La -> with keyboard
Ti, high Do -> with SmartPhone

Player 1 plays Do, Re, Mi, Fa
Player 2 plays Sol, La, Ti, and high Do





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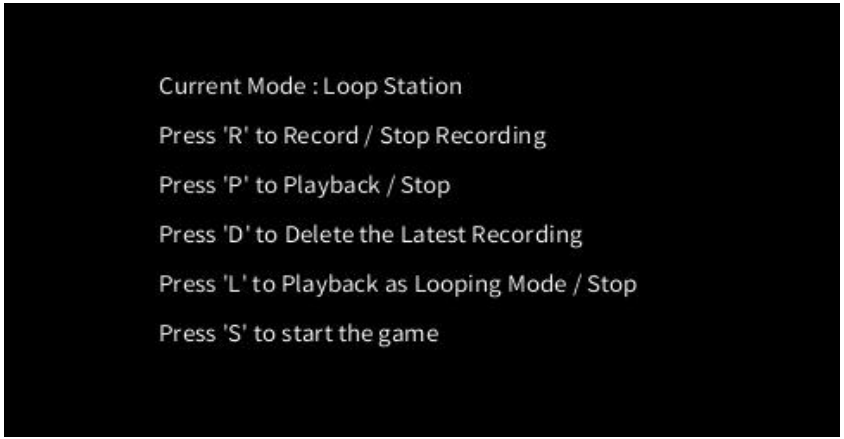
If each player hits the timing correctly,
a visual effect with particles and musical notes
appear around the player while the player
enlarges

2. Demo Video

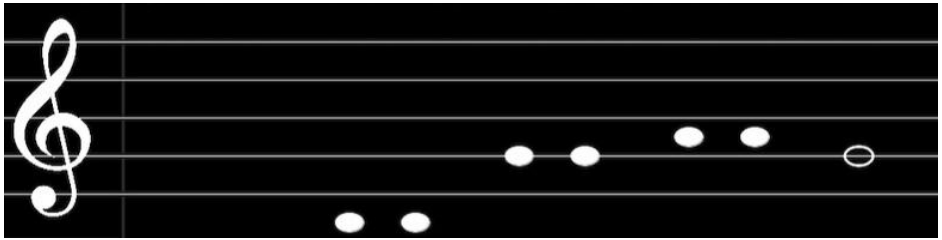
3. Codes

Loop Station



During playing the music, users can mix their own unique sound with piano

Music Sheet



We made the ‘Twinkle Twinkle Little Star’ sheet music appear from the left

Codes for Music Sheet

```
void setup() {
  size(1000, 1000);

  oscP5 = new OscP5(this, 12000);
  dest = new NetAddress("127.0.0.1", 6448);

  C4 = new SoundFile(this, "C4.wav");
  D4 = new SoundFile(this, "D4.wav");
  E4 = new SoundFile(this, "E4.wav");
  F4 = new SoundFile(this, "F4.wav");
  G4 = new SoundFile(this, "G4.wav");
  A4 = new SoundFile(this, "A4.wav");
  B4 = new SoundFile(this, "B4.wav");
  C5 = new SoundFile(this, "C5.wav");

  trebleclef = loadImage("trebleclef.png");
  frameRate(30);
  CY = space*6 -10 + 600;
  DY = space*6 - 25+ 600;
  EY = space*5+ 600;
  FY = space*5 - 20+ 600;
  GY = space*4+ 600;
  AY = space* 4 - 20+ 600;
  BY = space*3+ 600;
  C5Y = space*3 - 20+ 600;
```

```
void draw() {
  background(0);
  if(startMusic){
    image(trebleclef, -space / 2, 600, 150, space*6);
    push();
    stroke(200, 70);
    strokeWeight(3);
    line(130, 600, 130, height);
    pop();


    drawStaff();

    //1,2 note - C G A G
    float X = width-Counter;
    float[] Y_value = {CY, GY, AY, GY};
    for(int i = 0; i < 3; i++, X += 180){
      drawNote(X, Y_value[i]);//C4
      drawNote(X + 70, Y_value[i]);//C4
    }
    drawLongNote(X, Y_value[3]);

    //3,4 note - F E D C
    X = width - Counter + 180 * 4;
    float[] Y_value2 = {FY, EY, DY, CY};
    for(int i = 0; i < 3; i++, X += 180){
      drawNote(X, Y_value2[i]);//C4
      drawNote(X + 70, Y_value2[i]);//C4
    }
    drawLongNote(X, Y_value2[3]);

    //5, 6 note - G F E D
    X = width - Counter + 180 * 8;
    float[] Y_value3 = {GY, FY, EY, DY};
    for(int i = 0; i < 3; i++, X += 180){
      drawNote(X, Y_value3[i]);//C4
      drawNote(X + 70, Y_value3[i]);//C4
    }
    drawLongNote(X, Y_value3[3]);

    //7. 8 note - G F E D
    X = width - Counter + 180 * 12;
    float[] Y_value4 = {GY, FY, EY, DY};
    for(int i = 0; i < 3; i++, X += 180){
      drawNote(X, Y_value4[i]);//C4
      drawNote(X + 70, Y_value4[i]);//C4
    }
    drawLongNote(X, Y_value4[3]);

    //9, 10 note - C G A G
    X = width-Counter + 180 * 16;
    float[] Y_value5 = {CY, GY, AY, GY};
    for(int i = 0; i < 3; i++, X += 180){
      drawNote(X, Y_value5[i]);//C4
      drawNote(X + 70, Y_value5[i]);//C4
    }
    drawLongNote(X, Y_value5[3]);

    //11, 12 note - F E D C
    X = width - Counter + 180 * 20;
    float[] Y_value6 = {FY, EY, DY, CY};
    for(int i = 0; i < 3; i++, X += 180){
      drawNote(X, Y_value6[i]);//C4
      drawNote(X + 70, Y_value6[i]);//C4
    }
    drawLongNote(X, Y_value6[3]);

    Counter+=3;
  }
```

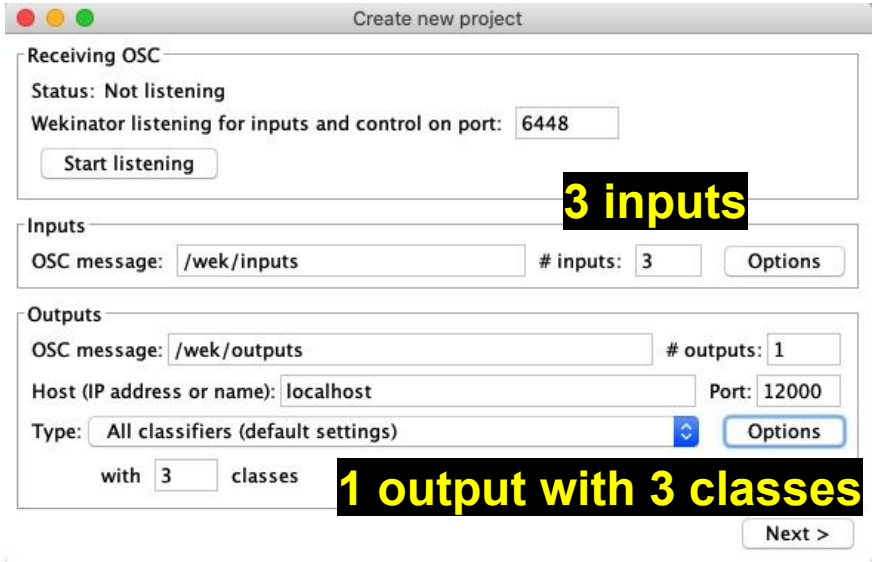
```
void drawNote(float X, float Y){

  if(X < 132 && X > 128){
    checkTiming();
    println("Note in the box");

    fill(255, alpha);
    noStroke();
    ellipse(X, Y, 30, 20);
  }
  else{
    fill(255, 255);
    ellipse(X, Y, 30, 20);
  }
}

void drawLongNote(float X, float Y){

  if(X <132 && X >128){
    println("Long note in the box");
    checkTiming();
    noFill();
    strokeWeight(3);
    stroke(255, alpha);
    ellipse(X, Y, 30, 20);
  }
  else{
    noFill();
    strokeWeight(3);
    stroke(255, 255);
    ellipse(X, Y, 30, 20);
  }

}


void drawStaff() {
  stroke(255);
  strokeWeight(1);

  for (float y = space + 600; y < (space * 6) + 600; y += space) {
    line(0, y, width, y);
  }
}
```

Wekinator

By using Wekinator and ML,

Rotate the phone to the left
=> The user can play ‘Si’ note

Rotate to the right
=> can play high ‘Do’ note



Do	Re	Mi	Fa	Sol	La	Ti	Do
1	2	3	4	5	6	←	→