Game Development for Pythonistas using Godot

Sophie de Klerk

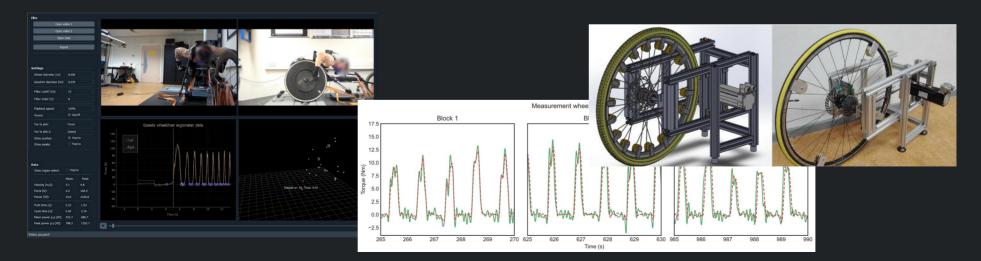


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Who this?



- RAK Sophie de Klerk
- Human Movement Scientist
- Python for signal processing / data analysis



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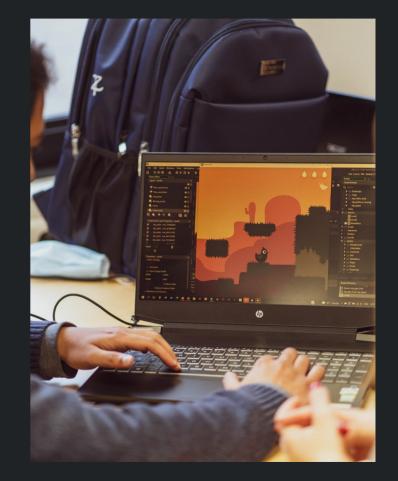
- RIKK Sophie de Klerk
- Human Movement Scientist
- Python for signal processing / data analysis

 Lecturer-researcher at Creative Media and Game Technologies

What is CMGT?



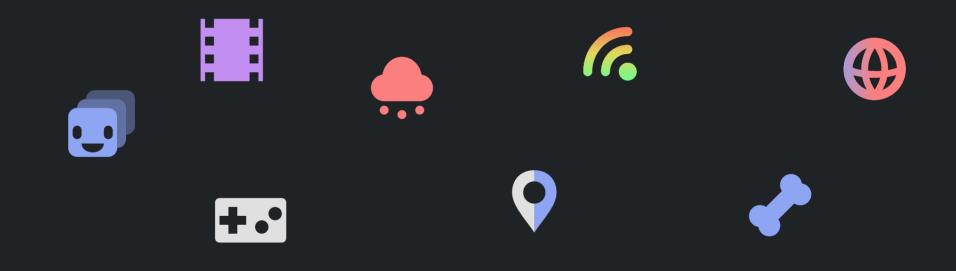
- Work with Future Tech
- Use Game Technologies
- Teamwork, Critical thinking
- Digital Creator and Innovator
- Create for Users



Learn by doing!

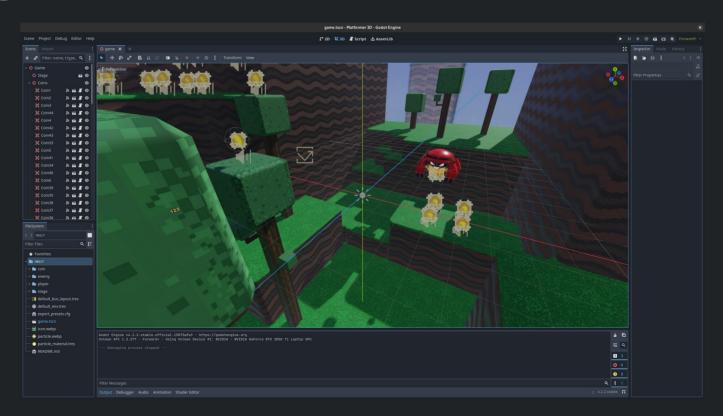


• Game engine (duh...)





- Game engine (duh...)
- Editor

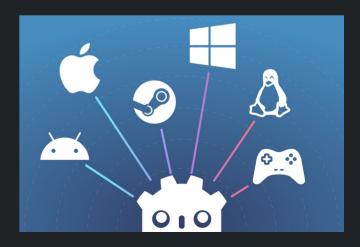




- Game engine (duh...)
- Editor
- Separate 2D and 3D engines



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- Export to Linux, Mac, Web,
 Windows, Phones, Console*





- Game engine (duh...)
- Editor
- Separate 2D and 3D engines
- Export to Linux, Mac, Web,
 Windows, Phones, Console*
- Open source!

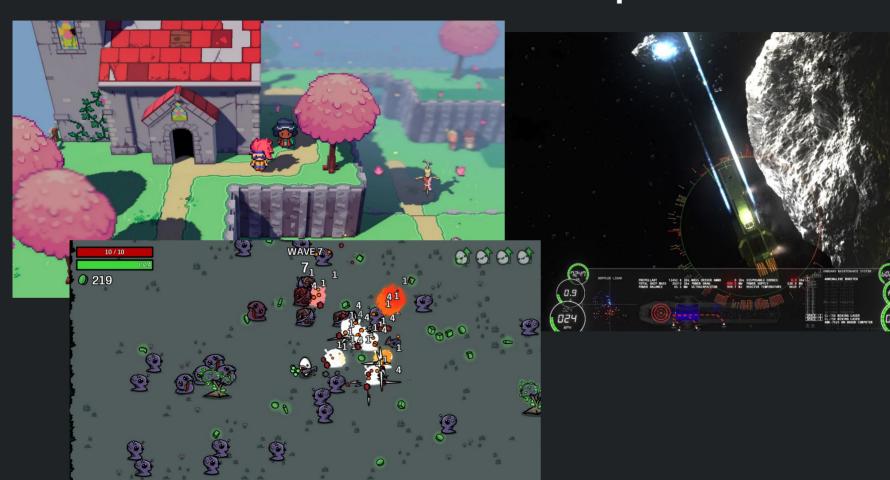














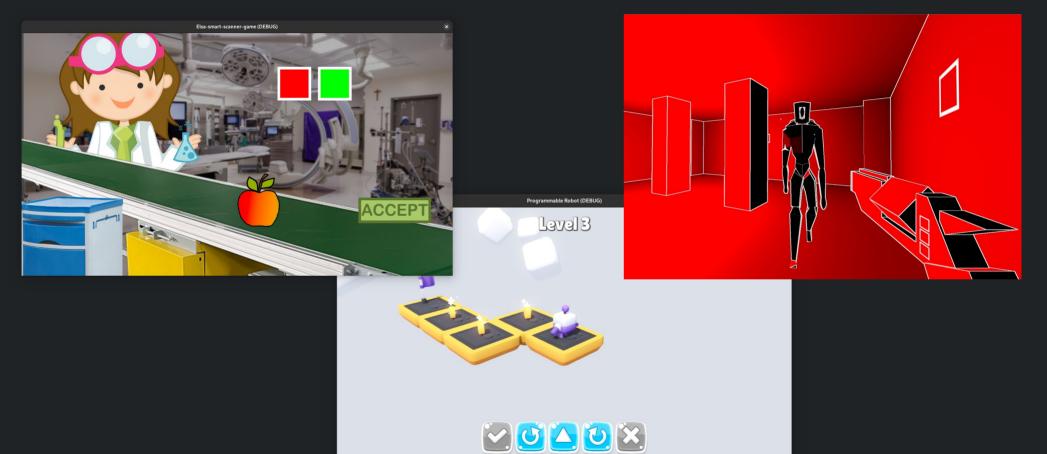






Some of our examples





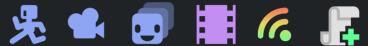


Nodes





Nodes













Nodes













Scenes



Scene tree





Nodes















Scene tree



Signals



Resources



Programming in Godot



- GDScript
- C#
- GDExtension
- Other bindings

```
extends Area2D
    const MOVE SPEED = 100
                                                                      /eSpeed = 100;
    var ball dir
    var down
                                                              down:
    onready var screen size y = get viewport rect().size.y
    func ready():
             = String(name).to_lower()
                                                        ing name = Name
                                                      dp = name +
        down
        if n
                                                      down = name ·
                                                      ballDir = name
                                                public override void Pro ss(float delta)
                                                    float input = Input.GetActionStrength( down) -
        var input = Input.get action stren
                                                    Vector2 position = Position; // Required so th
                                                    position += new Vector2(0, input * MoveSpeed >
                                                    position.y = Mathf.Clamp(position.y, 16, GetVi
                                                    Position = position;
    func on area entered(area):
        if area.name == "Ball":
           area.direction = Ve
                                                public void OnAreaEntered(Area2D area)
31 I
```



- Inspired by Python (but unique!)
- Indentation based

```
if param1 < local_const:</pre>
    print(param1)
elif param2 > 5:
    print(param2)
else:
    print("Fail!")
for i in range(20):
    print(i)
while param2 != 0:
    param2 -= 1
```



- Inspired by Python (but unique!)
- Indentation based
- Gradual typing

```
var a = 5
la = "5"
var b: int = 6 # explicit type
h = "6"
var c := "7" # inferred type
```



- Inspired by Python (but unique!)
- Indentation based
- Gradual typing
- Built-in types for gamedev

```
var v2 = Vector2(1, 2)
var v3 = Vector3(1, 2, 3)
enum WeaponType {SWORD, MACE, BOW}
```



- Inspired by Python (but unique!)
- Indentation based
- Gradual typing
- Built-in types for gamedev
- Fast compilation
- Memory management

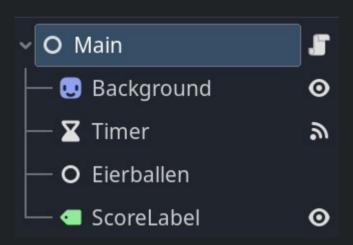


Enchanting gameplay experience

Wrapping up



Nodes, Scenes, Signals, GDScript

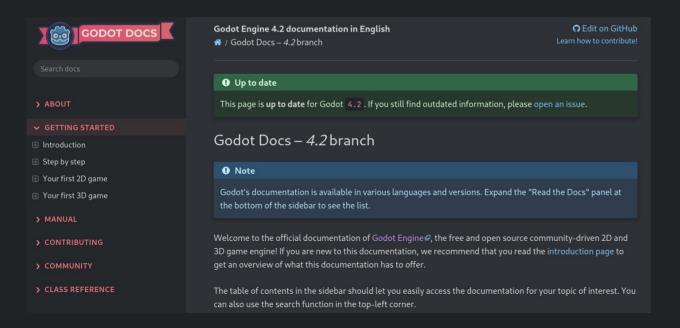


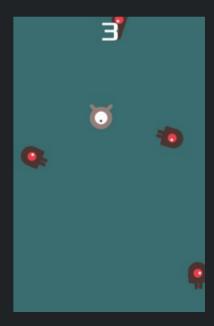
```
extends Node
        @export var eierbal_scene: PackedScene
     \vee var score: int = 0 :
           set(value):
               score = value
               score_label.text = str(score).lpad(4)
       var speed multiplier: float = 1
       @onready var score_label: Label = $ScoreLabel
        @onready var eierballen_container: Node = $Eierballen
       @onready var timer: Timer = $Timer
→1 16 v func _on_timer_timeout() -> void:
           var new_eierbal := eierbal_scene.instantiate() as Eierbal
  17
           eierballen_container.add_child(new_eierbal)
           new_eierbal.eierbal_caught.connect(_on_eierbal_caught)
```

Wrapping up



- Nodes, Scenes, Signals, GDScript
- Have a look at the documentation!

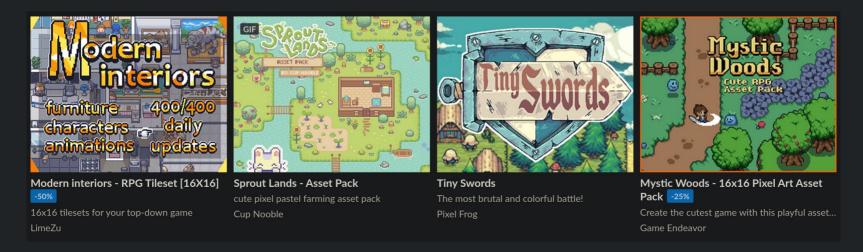




Wrapping up



- Nodes, Scenes, Signals, GDScript
- Have a look at the documentation!
- Have a look at all the free assets on the web!



Credits

- Godot Python Logo by Pinswell (CC-BY)
- Info, logo, icons from official documentation (CC BY)
- Image Groningen by Michiel Verbeek (CC-BY-SA)
- Image of Eierbal adapted from Erik009 (CC-BY-SA)

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