



Universidad Politécnica
de Madrid

**Escuela Técnica Superior de
Ingenieros Informáticos**



Grado en Ingeniería Informática

Trabajo Fin de Grado

**Diseño y Desarrollo de un Prototipo de
Simulación para Robots Aéreos basado
en Unreal 5, ROS2 y Gazebo (Informe
Intermedio)**

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Resumen

Aquí va el resumen del TFG. Extensión máxima 2 páginas.

Agradecimientos

Gracias

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1. Introducción

1.1. Descripción General

La simulación de drones es un campo relativamente nuevo, sin embargo, eso no implica que sea poco extenso. En los recientes años se han eralizado grandes avances e investigaciones con diversos fines. Desde el estudio de sus fisicas para su posterior implementación en entonrnos virtuales para su simulación, como estudios para descubrir los posibles usos que se les puede dar a estas versátiles máquinas, como puede ser su uso en seguridad de edificios, mantenimiento de campos de placas solares e incluso entretenimiento con enjambres de cientos de estos pequeños robots.

Asi pues, este trabajo tiene como objetivo crear un simulador de vuelo de drones en el entorno gráfico de Unreal Engine 5 realizando una integración con la librería de comunicación de C ROS2 para así crear un sistema de manejo automático de la trayectoria del dron. La implementación de la gran mayoría del proyecto se realizará en C++.

1.2. Unreal Engine 5

2. Title of next chapter

2.1. Overview

bla bla bla bla bla bla bla bla bla bla b la bla bla bla PPS bla bla bla bla bla bla
 bla
 bla
 bla
 bla
 bla bla bla bla bla bla, see [Ric21, Mar63].

2.2. The next section

La inserción de código fuente se puede hacer directamente desde el archivo¹:

Listing 2.1: Un programa en C

```
1
2 int main() {
3     char saludo[128] = "Hola mundo";
4     printf("1: %s\n", saludo);
5 }
```

O con insertando un flotante de tipo Algoritmo y luego insertando igual que antes el archivo fuente:

Algoritmo 2.1 Una clase de Java

```

1
2 public class UnaClase {
3
4     private static final SALUDO = "Hola Mundo";
5
6     public UnaClase() {
7         System.out.println(SALUDO);
8     }
9
10    public static void main(String[] args) {
11        new UnaClase();
12    }
13
14 }

```

¹Para insertar, hay que ir al menú insertar -> Archivo -> Documento hijo y seleccionar tipo de inclusión Listado de código fuente.

Se puede hacer referencia al flotante: Algoritmo 2.1 o a la referencia del listado: Listing 2.1.

Y se puede delimitar lo que se muestra utilizando las opciones del paquete *Listing*, mediante *firstline* y *lastline*, usando estas opciones en el recuadro de configuración.

Nota:

Como se puede ver si se introduce el título al insertar el documento hijo aparece *Listing*, se recomienda utilizar un flotante de tipo “Algoritmo” para mostrar código fuente.

3. Title of next chapter

3.1. Overview

bla bla bla bla bla bla bla bla bla b la bla bla bla PPS bla bla bla bla bla bla
bla
bla
bla
bla
bla bla bla bla bla bla, see [Ric21, Mar63].

3.2. The next section

4. Title of next chapter

4.1. Overview

bla bla bla bla bla bla bla bla bla b la bla bla bla PPS bla bla bla bla bla bla
bla
bla
bla
bla
bla bla bla bla bla bla, see [Ric21, Mar63].

4.2. The next section

A. Title of the first appendix chapter

A.1. Overview

bla bla bla bla bla bla bla bla bla bla bla bla bla bla bla bla b la bla bla bla bla bla bla
bla
bla
bla bla bla bla bla bla bla bla bla bla bla bla bla bla bla bla bla roughness parameter
 R_a bla
bla bla bla bla bla bla bla bla bla bla, see [ISOa].

A.2. The next section

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Nomenclatura

R_a arithmetic average roughness

PPS Polyphenylene sulfide

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