

COMP 4920 Senior Project Design Project Presentation, Fall 2021

Project Code: #DRONOMATRIX
Project Name: CYBER DRONE

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ACKNOWLEDGEMENTS



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OUTLINE



- Motivation
- Project Aim
- Related work
- General Introduction
- System Design & Interaction
- Aspects of the project that can be improved
- Conclusion

MOTIVATION



- Most realistic drone simulation environment on Unity.
- Realistic weather and effects.
- Realistic drone movement and 360 degree perspective.

PROJECT AIM



- Implementing a realistic simulation environment.
- Reduce the cost of damage caused by the user and environmental conditions.
- Realistically training drone pilots.
- Can be used in aviation system training.

BEST EXAMPLES PREVIOUSLY PRESENTED



Name	Company	Type
DJI Flight Simulator	RembelTech	Real simulator
DRL Simulator	Drone Racing League	Video Game
Real Flight Drone Edition	Real Flight	Video Game
Phoenix RC 5.5 (PC Windows)	Phoenix RC	Video Game
LiftOff Drone Simulator (PC Windows)	LuGus Studios	Video Game

GENERAL INTRODUCTION



- Realistic simulator
- Drone customization
- Weather effects
- Map selection
- Single Player/Multiplayer mode
- Web Administration

SYSTEM DESIGN & INTERACTION



Unity

- Simulation environment
 - Maps
 - Drones
 - Weather effects
- Single/Multiplayer mode

Online User System

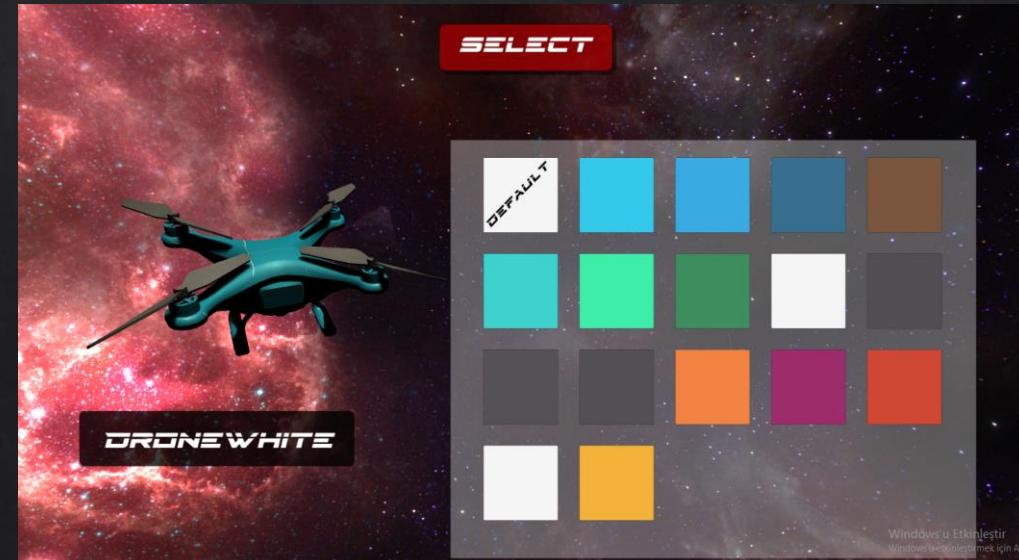
Web Administration

- User Management
- Log Management
- Data Management

DRONE CUSTOMIZATION



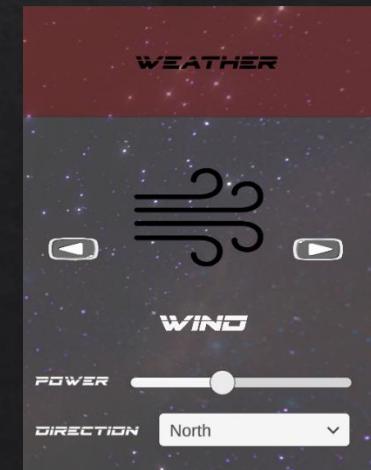
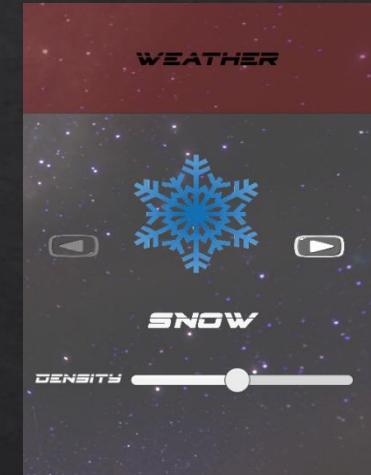
- In the customization page, you can customize your drone with 17 different color
- Each drone can be customizable with these options



WEATHER EFFECTS

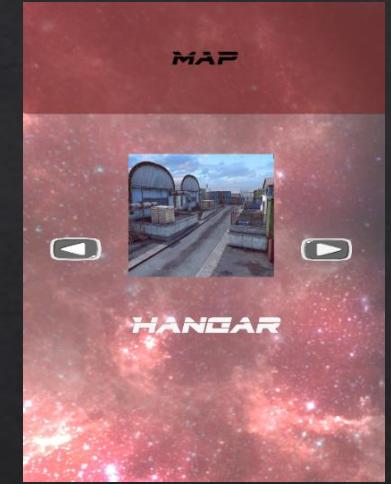


- There is four different weather option
- Snow with density Rain with density
- Wind with direction and power Sunny
- Weather effects the gameplay and visual wise



MAP SELECTION

- There are six different maps
- Three introduction level and three normal level
- Each level is different from each other



UNITY MULTIPLAYER



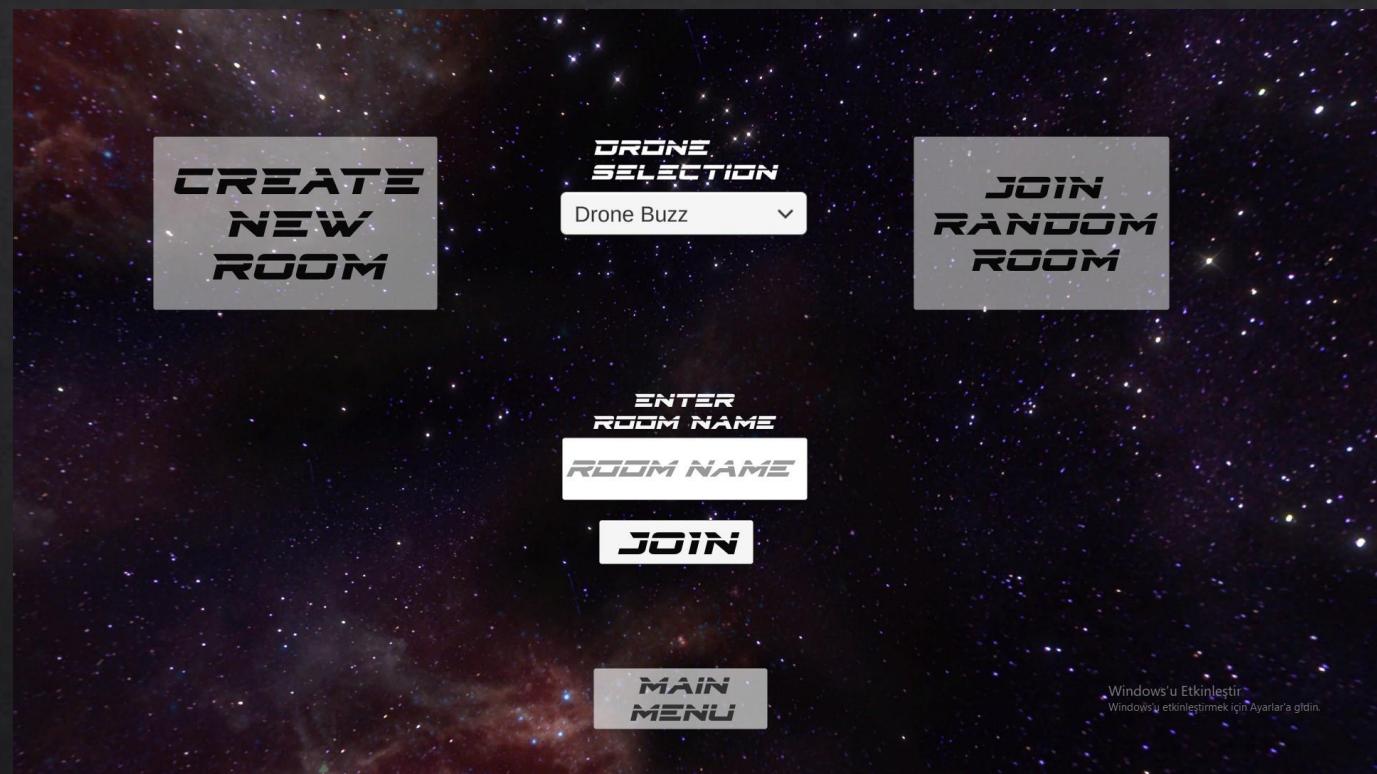
- Photon Network
- Create & Join Room
- Leave Room
- Drone Selection



UNITY MULTIPLAYER



- Room Info
- Player List
- Player Tag Name
- Free style



WEB ADMINISTRATION



CYBER DRONE Add User Records Controllers ▾

Search Search

Filter Type to Search Clear

Filter On userId firstName lastName userName email type createdDate
Leave all unchecked to filter on all data

Per page 2

User Id	First Name	Last Name	User Name	Email	Type	Created Date	Actions
1	Ege Erberk	USLU	ege.uslu	egeberkuslu@gmail.com	admin	5.03.2021 16:28:21	Show Details Delete User
2	Bora	GUZEL	bora.guzel	bora99@gmail.com	admin	5.03.2021 16:30:53	Show Details Delete User

CYBER DRONE Add User Records Controllers ▾

Search Search

Username: Admin No file chosen

FirstName: CyberDrone

LastName: DronoMatrix

Email: cyberdronedronomatrix@gmail.com

Update

CYBER DRONE Add User Records Controllers ▾

Filter Type to Search Clear

Filter On logID operationType userId FirstName LastName UserName Email Type CreatedDate imagePath logDate
Leave all unchecked to filter on all data

Per page 3

Log Type: User

Log ID	Operation Type	User Id	First Name	Last Name	User Name	Email	Type	Created Date	Image Path	Log Date
1	INSERT	1	CyberDrone	DronoMatrix	Admin	cyberdronedronomatrix@gmail.com	admin	21.05.2021 21:42:46	default	21.05.2021 21:42:46

1 2 3 4 5 6 7

- Secure Login
- Online Users
- Forget Password
- Change Password
- Managing Users
- Accessing Records
- Bug Reports
- Logs

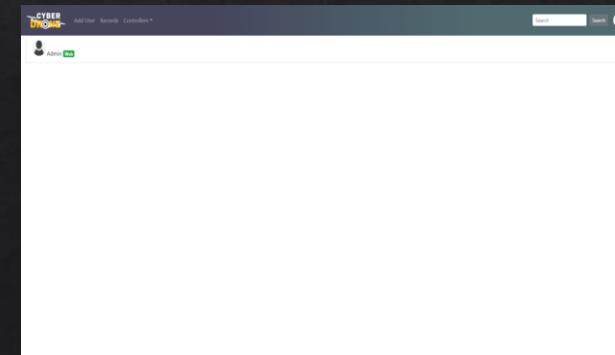
SECURE LOGIN

- RSA
- SHA256
- AES



ONLINE USERS

- Shows Users
- Simulation and Web
- Online User Server



FORGET PASSWORD

- New Generated Password
- Send email to User

CHANGE PASSWORD

- New Password to system.



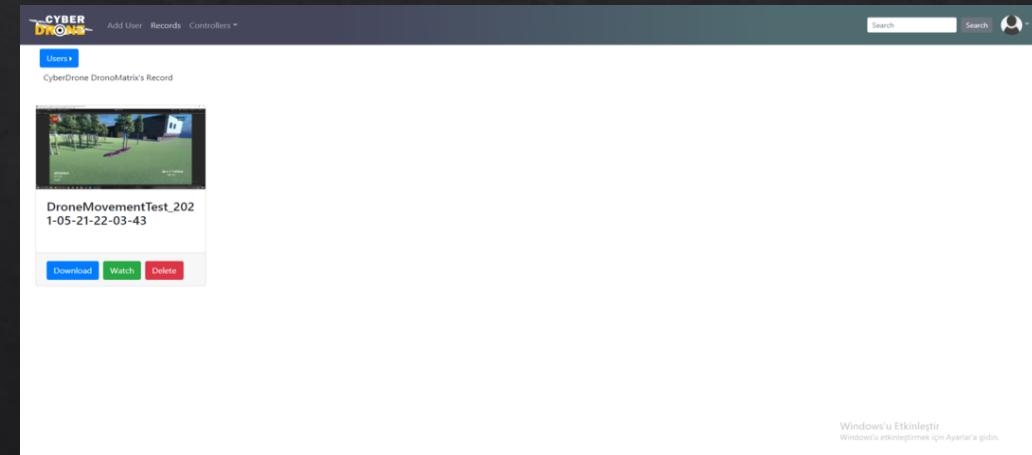
MANAGING USERS

- CRUD operations
- Changing Credentials



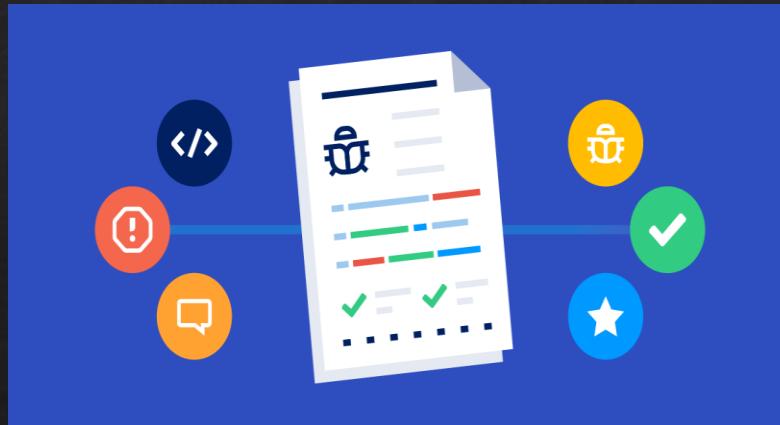
ACCESING RECORDS

- Watching
- Downloading



BUG REPORT

- Accessing Reported Bugs
- Exporting them in PDF



LOGS

- User Logs
- Record Logs
- Bug Logs

CYBER DRONE						Search	Search	Logout
Records						Add User	Records	Controllers
PDF								
Filter Type to Search								
Clear								
Per page: 2								
Filter On: <input type="checkbox"/> bugID <input type="checkbox"/> userfullName <input type="checkbox"/> bugTitle <input type="checkbox"/> bugDesc <input type="checkbox"/> bugImage <input type="checkbox"/> bugDate								
Leave all unchecked to filter on all data								
Bug ID								
User Full Name								
Bug Title								
Bug Desc								
Bug Image								
Bug Date								
1								
CyberDrone DroneMatrix								
Test								
Test								
23.05.2021 00:00:00								
Windows'u Etkinleştir								
Windows'u etkinleştirmek için Ayarlar'a git								

FUTURE WORK



In future;

- Adding more maps & weather conditions.
- As a drone compiler simulator.
- Multiplayer lobby system & friend list.
- More realistic movement with Physics Engine
- Improvement for swarm drones.

CONCLUSION



- Single/Multiplayer mode simulation system
- Different maps / different conditions
- Realistic Drone Movement
- Web-Unity integrated system
- Usage Area -> Drone pilots , Space and aviation systems, Game Industry

REFERENCES



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Q & A



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