

UI/UX: War Game

Presented By

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Rankireddy Sai Mani Akarsh

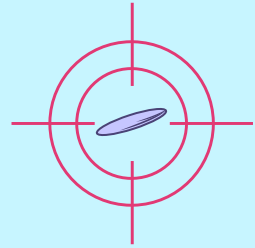


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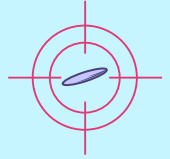
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PROBLEM STATEMENT

Context / objectives / Future

01



SOLDIER

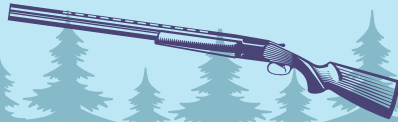
Strategy, planning and execution of military operations.

- Strategic Thinking: Resources and Tasks
- Communication: Working together
- Awareness: Respond quickly to information about terrain, weather, adversaries.

COMMANDER

Simulate military situations to test strategies, assign tasks and assess performances.

- Flexibility: Allow change in parameters
- Models: Simulate real world objects
- Assign Roles: Leaders and specialists
- Monitor and evaluate.



OBJECTIVES

Simulate a wargame with these properties in mind

- Top-View
- 3rd person
- Commander's perspective

TRENDS / IMPACT

WG has been around for centuries. Some very recent trends suggest increased involvement of better networks and AI.

[1]

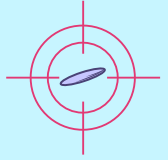
- Better responsiveness:
Real-time developments
- Flexibility and
Adaptiveness.



APPROACH

Plans / Methods / Tools

02



SOLDIER

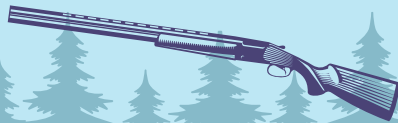
Strategy, planning and execution of military operations.

- Strategic Thinking: Resources and **Tasks**
- Communication: Working together
- Awareness: Respond quickly to information about terrain, weather, adversaries.

COMMANDER

Simulate military situations to test strategies, assign tasks and assess performances.

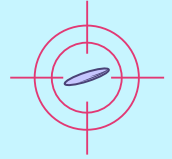
- Flexibility: Allow **change** in parameters
- Models: Simulate **real** world objects
- Assign Roles: Leaders and specialists
- **Monitor** and evaluate.



OUTCOMES / CHALLENGES

Problems encountered / Solutions
implemented

03



PROBLEM 1

Pygame uses SDL library to perform graphic operations such as rotations. Performing a high number of rotations through CPU alone can put a lot of strain.

- Hardware Acceleration (OpenGL)
- Caching

PROBLEM 2

Collisions can be challenging to model in a game with entities of different shapes and behaviors.

- Quadtree: More efficient
- Masks: Transparent images

PROBLEM 3

Addition of more elements on the screen can cause Screen Tearing.

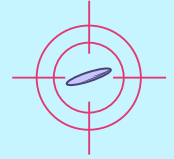
- VSync



FUTURE

Potential additions / improvements

04



PLAYER

Adding multiplayer abilities

- Communication
- Coordination
- Dependent on parameters (weather)

The parameters provided can be used to model more complicated situations

- Abilities depend on terrain and health

ADVERSARY

To model the adversary's behavior in a better manner, parameters can be changed

- Use of reinforcement learning

Positive rewards

- Avoid hits, collect bonus

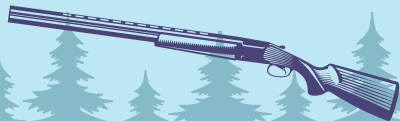
Negative rewards

- Take hits, lose civilians



POTENTIAL IMPROVEMENTS

- The sound effects can be made better through Google Cloud API.
- More algorithms for collision detection can be tested.
- Assignment of roles can be introduced for training of specific military personnel.



CONTRIBUTIONS

Add entities	S
Game UI	S
Model behavior	S
Model movements	S
Model bullet hits	S + A
Model Bomb hits	S

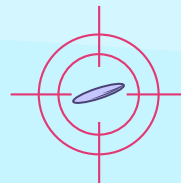
Settings UI	A
Settings Functionality	S
Save Games	A
Projectiles	S
Animations	S
Random Behavior	S
Opening UI	A + S

Stats	S
Feedback	
In-Game	
Text feedback	A
Sound Effects	S
Fixing Code Structure	S

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A	Akarsh



THANKS!



DO YOU HAVE ANY QUESTIONS?

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