Battlespace Blog NEW UPDATED

- Daniel Francis
- Shaleta Bennett
- Derek Rollend
- Tom Batkiewicz

Add comment

ShaletaBennett - 02 August 2007

Battlespace.doc

ShaletaBennett - 31 Jul 2007

Battlespace.doc

DanielFrancis - 31 Jul 2007 - 16:01

some of my editing to the research paper

battlespace_myedits.doc: battlespace_myedits.doc

ShaletaBennett - 31 Jul 2007

Battlespace.doc

DanielFrancis - 30 Jul 2007 - 16:24

wxMain.cpp

wxMain.h

ShaletaBennett - 30 Jul 2007

Updated research paper Battlespace.doc

DanielFrancis - 27 Jul 2007 - 15:28

The mission overview screenshot.

mission_overview.png

mission_overview_crop.png

ShaletaBennett - 27 Jul 2007 - 10:14

Revision of the research paper Battlespace.doc

DanielFrancis - 23 Jul 2007 - 10:58

Another revision of the poster reflecting changes requested by Pam

poster_34.pdf

DanielFrancis - 20 Jul 2007 - 17:19

Here's the most recent poster at the end of today (Friday).

poster_31.pdf

DanielFrancis - 20 Jul 2007 - 11:38

Another poster revision.

poster_27.pdf

DerekRollend - 20 Jul 2007 - 10:11

Here is the .cpp file for the mission_scenario screen (intro screen) you can use for reference...Basically everything happens in the drawTabs function.

mission_scenario.cpp: Mission Overview Screen CPP

DanielFrancis - 19 Jul 2007 - 14:20

A test version of our research poster.

poster_14.pdf

poster_14_embed_all.pdf

poster_16.pdf

poster_20.pdf

poster_23.pdf

ShaletaBennett - 19 Jul 2007 - 10:49

Here's a sketch of the paper. It hasn't been revised, formatted, or completed. This is only to show you all the process...

battlespace_research_paperrrrrrrrrrrr.doc: battlespace_research_paperrrrrrrrrrrr.doc

TomBatkiewicz - 18 Jul 2007 - 10:42

Extra C++ References

http://www.cplusplus.com/doc/tutorial/

http://www.cprogramming.com/tutorial.html

Outline

Here's the outline for Battlespace Research Paper. It shows the direction we're going with this paper.

I. ABSTRACT

II. AUTHOR KEYWORDS

III. INTRODUCTION

IV. RELATED RESEARCH (MIIIRO)

V. INTERFACE and SIMULATION (Describe old & new task manager including tool bar and sidebar, mission scenarios, and wizard)

VI. ARCHITECTURE AND IMPLEMENTATION (wxwidgets & C++)

VII. CONCLUSION

VIII. ACKNOWLEDGEMENTS

IX. REFERENCES

DanielFrancis - 16 Jul 2007 - 14:07

Our research abstract:

Advanced visualization and automation for more effective control of Unmanned Aerial Vehicles

For years, the remote control of a single unmanned aerial vehicle (UAV) has required multiple operators . The overall goal of the Battlespace project is a reversal of this procedure, where a single operator controls and

monitors multiple vehicles simultaneously. Battlespace is an ongoing real-time application enabling an operator to enter a virtual environment and control multiple vehicles on a vast terrain. The Battlespace was created in collaboration with Air Force Research Lab and Iowa National Guard.

The goal of this research is to enhance the existing Battlespace platform by creating a game-playing interface that allows the operator to use the Task Manager to operate multiple UAVs. In the beginning of the simulation, the operator will be presented with a mission scenario and will be placed into the urban environment of Las Vegas, Nevada. To complete the mission, the operator will be able to assign multiple vehicles to a mission to track an object of interest, e.g., a specific person or car. The UAVs will report feedback to the operator through alerts. Command and control tasks will be made more accessible with an improved task manager interface.

DanielFrancis - 13 Jul 2007 - 13:55

A little history on the Battlespace taskmanager, Tom Batkiewicz's Masters work.

- http://www.vrac.iastate.edu/~tjwitz/ThesisDefense.ppt
- http://www.vrac.iastate.edu/~tjwitz/Thesis.doc

DanielFrancis - 13 Jul 2007 - 11:13

Here's a sample of the wxMain.cpp file from Tom, now with a notebook in it.

wxMain_notebook.cpp: wxMain_notebook.cpp

wxWidgets - Better Website/Tutorial

I found a different wxWidgets website that seems to have a better tutorial system/more graphics

http://www.bzzt.net/~wxwidgets/icpp_wx1.html

Deadlines

16 July 2007 - Rough Draft of 24"x36" poster due

16 July 2007 - Title & Abstract

20 July 2007 - Final Poster Layout due in .PDF format

23 July 2007 - Rough Draft of Paper

DanielFrancis - 10 Jul 2007 - 15:33

Milestones established at today's meeting.

milestones.sxw

REU07.Shaleta Benett -10 Jul 2007- 10:14

Illustration of Toolbar Buttons Toolbar_Buttons.ppt

DerekRollend - 10 Jul 2007 - 10:49

Toolbar_Buttons.ppt: Toolbar Mockup

DanielFrancis - 10 Jul 2007 - 10:07

Revision 3 of the Software specification document. SoftwareSpec_3.sxw

DanielFrancis - 09 Jul 2007 - 16:54

And the pinnacle of our specification document for the day.
SoftwareSpec_2.sxw

DanielFrancis - 09 Jul 2007 - 11:41

Just wanted to give a little updated on things before lunch for anyone

interested, we've set forth on our software specification document. Do note this is not even near completion, I'm adding so team members can use/expand it and so we have a record of our progress on this item.

SoftwareSpec_1.sxw

StephenGilbert - 06 Jul 2007 - 15:17

For next Tuesday, here are the goals.

- Solidify interface vision in a "spec doc" that describes the interface and several use cases. Use a toolbar approach.

The Use Cases are at least (feel free to add more):

- Initial scenario / mission
- Check on a UAV, e.g. watch its video
- Change a UAV's settings (e.g., queue or scanning approach)
- React to an alert

A Use case consists of a series of interface states, user actions, and expected behavior, e.g.

Initial State is ....
User Step 1 - user does foo
Expected behavior of interface is ...
User Step 2 - user does bar
Expected behavior of interface is...

You can put screenshots in there if easy / useful.

DerekRollend - 09 Jul 2007 - 9:41

Here's the powerpoint mockup of the mission scenario window.

mission_scenario_mockup.ppt: Intro_to_Mission_Mockup

TomBatkiewicz - 06 Jul 2007 - 14:53

Wx Documentation -

http://www.wxwidgets.org/manuals/stable/wx_contents.html

This is pretty much the comprehensive list/guide to using wxWidgets. It covers everything from general architecture to detailed documentation for each class.

DanielFrancis - 06 Jul 2007 - 11:34

More UI Mockups

The saga continues, in this particular open office impress file I've done some mockups of the various interface ideas we've been discussing as a team lately. In particular I've added a tabbed sidebar with "vehicles," "areas & paths," and "log" tabs.

"Vehicles" shows all the vehicles currently under the operator's control. Each vehicle's entry on the list shows it's estimated remaining runtime on the current fuel load, it's payload, and a queue of the areas and paths it will be flying. At the bottom of the vehicles tab are buttons for connecting and disconnecting from remote vehicles. We may or may not keep these connect/disconnect buttons, depending on the scope our project takes this summer. I believe they should stay part of our simulation simply because it allows the operator to see how this interface could be expanded from an RTS game and applied to real world command and control situations.

The "Areas & Paths" tab is where all the operator's flight paths and search areas are kept. The operator can specify areas and paths at any time, without assigning them to a particular vehicle. Paths are created by clicking points in sequence as is currently. I propose area selections always start as a square area thrown into the center of the map view when "new area" is clicked. From there the user can modify shape and size by dragging current vertices as desired or clicking in the middle of sides to create new vertices.

Finally, the "Log" tab is a detailed record keeping area where all UAV events are kept. For example, "connected to Predator 19 @ 0925" or "Predator 19 finished searching Charlie Sector @ 1135" or "Predator 19: found possible image match to 'bluetruck.jpg.' " High priority alerts like search subject found or a vehicle with nothing left in it's action queue will show up in red and yellow rounded rectangles overlayed onto the left side of the map. Clicking the alert would take the operator's view to the alerted vehicle on the map and clear said alert from the screen.

Mockup_tabs.sxi

DanielFrancis - 02 Jul 2007 - 16:34

Lessons from Supreme Commander:

I spent a few hours over the past few days playing a fairly recent Real Time Strategy game, *Supreme Commander.* It was quite an experience, quite a departure from other RTS games I've played in the past. The biggest difference was the scale of the game; I read that each faction of the battle is capped at 1,000 units, and I believe it.

Here's my list of random observations related to usability:

- Controlling thousands of units via keyboard and mouse is way hard
- Constant zooming in and out with the mouse scroll wheel is a tiresome way to navigate around a battlefield
- Zooming is unavoidable on a small screen because one must both work in detail with units and see the entire battlefield to assess the situation
- Automation and group behavior helps in controlling large numbers of units
- Screen size & resolution is important
- As much of the screen as possible should be dedicated to the map
- It's easy to forget what a unit is doing if it doesn't alert you that it's completed its previous set of tasks
- This means resources are used sub optimally or perhaps not at all
- If automation tools are used (unit groups, task queues, moving in formation) huge problems arise when the tools don't behave as expected
- The tools seem to overload and act in error, with no error handling and no request for the operator to deal with the error.
- Error handling is important and it seems one should err on the side of reporting too much rather than too little the the operator.
- Without extensive practice it is difficult and exhausting to control hundreds of units simultaneously or perform precision maneuvers
- Even with practice operator performance seems to decline when large numbers of units are being commanded.

So in summary, what would make this game easier for the operator (besides having better weapons on one's own side)?

- Large, high resolution screen. As big as possible, in order to facilitate physical rather than virtual navigation around the virtual environment.
- Less tiresome control peripherals. Mouse scrolling to zoom == painful after a couple hours
- Alerts system to help the operator remember which assets are idle and can be put to a new task (really important as unit counts climb)

DanielFrancis - 29 Jun 2007 - 15:32

Mockup Tasks for next Tuesday Morning

revised_mockup_specs.sxw: revised_mockup_specs.sxw

DanielFrancis - 28 Jun 2007 - 16:39

Updated Mission Needs:

UAV_Mission_Needs_updated_by_stephen.rtf This is for you Stephen, and anyone else who's interested, just our updated mission needs notes.

DanielFrancis - 18 Jun 2007 - 16:47

Progress: a rough outline of steps and decisions to be made for surveillance mission command is in this .rtf file. This was mainly a brainstorming aid, a proper flowchart is probably in order for this project soon. Our next step is to identify how the commander will make these interactions with Battlespace.

* UAV_Mission_Needs.rtf: UAV_Mission_Needs.rtf

June 15, 2007: Notes from the Wednesday Meeting

Just wanted to make a brief note of what tasks we're working for next week:

- Work on user scenarios, charting the interaction between user and computer and the types of interface elements to take in different commands from the user
- Getting familiar with linux, svn, and running battlespace

StephenGilbert - 15 Jun 2007 - 09:42

Another article to check out on flying surveillance cameras in Britain. They call them "flying CCTV cameras" rather than UAVs, but it looks like the same thing. Relevant to today's Journal Club.

http://www.guardian.co.uk/crime/article/0,,2085190,00.html

StephenGilbert - 14 Jun 2007 - 11:17

Hi all, check out this article on a prof building an "artificial conscience" for UAVs so that they can act ethically.

http://www.economist.com/printedition/displaystory.cfm?story_id=9249201

TomBatkiewicz - 13 Jun 2007 - 19:31

I've added some basic information on checking out and building battlespace here: GettingStartedWithBattlespace

StephenGilbert - 12 Jun 2007 - 06:04

Testing out new comment feature.

June 6, 2007 - Battlespace Team Meeting

Tasks Identified for this week

- Think big! Plan an overall narrative for the game.
- Mission tasks - Anything needed to plan or execute a mission
- Real-life research: Information on the different types of UAVs and their capabilities.
- Learn linux! Tom will post some guides and information on what you need to know. Update - Info can be found here

MissionScenarios UAV Info UAV Roadmap

- UAV_Info_Spreadsheet.xls: UAV INFO

June 6, 2007

Shaleta, Dan, and Derek

Our assessment of the accessibility of everyone's favorite search engine, GOOGLE!

- **Power Distance** - Low, there really is no distinction from higher up people, anyone can access anything whenever they want.
- **Collectivism/Individualism** - Highly individual, especially with the addition of iGoogle, can customize what comes up whenever you visit. Can also search for whatever you want.
- **Femininity/Masculinity** - Very gender neutral, aren't any gender specific customizations or statements readily apparent.
- **Uncertainty Avoidance** - Low, anything can happen on Google, you

don't know where a search could take you or what link could come up, very uncertain.
- **Long Term/Short Term Time Orientation** - Very short term based, since searches are timed to centiseconds and instantly links to non-Google pages come up extremely fast.
- **Usability for Older Adults** - Very accessible, can increase the font size for vision-impaired citizens, but everything on the page still fits with ease. No buttons are confusing, very simple interface that seems to be easily used by all, which is why Google has been so successful.

June 2, 2007

by Derek Rollend

Hello everybody, this is the Battlespace blog. I figured I'd get it started with a simple entry to give some information. On Wednesday we met with Tom Batkiewicz and Stephen Gilbert to get a better idea of what exactly we will be doing this summer on the Battlespace project. From what I gathered, we will be using the current Battlespace program and interface to create a video game-like program or set of scripts. We will also try (I think) to use a couple different interfaces, including the 2D selection/path planning software designed by Tom Batkiewicz and 3D interfaces (i.e. the wireless controller). I think another main part of what we'll be doing is thinking of and maybe creating several different situations the UAVs could be in, and maybe creating simulations of what would occur in those situations. Another part of the conversation that intrigued me was the thought of maybe using the Unreal engine to simulate an urban environment in the Battlespace program that could show how the UAVs act in that kind of environment (as opposed to the more desert/open/spacious visualizations we have seen so far). I hope this gives some insight to others outside the project, and I hope that Dan, Shaleta, and Tom will add on to this entry with their thoughts/plans. Thanks for reading!

-Derek

- Mockup_Alert_Window.ppt: Mockup_Alert_Window.ppt
- Mission_Scenario.doc: Mission_Scenario.doc
- mission_1: mission_1
- mission_2: mission_2
- mission_3: mission_3
- BSTMScreenShots.zip: BSTMScreenShots? .zip
- Battlespace_schpiel.doc: schpiel

I	Attachment	Action	Size	Date	Who	Comment
	Screenshot.png	manage	565.3 K	20 Jul 2007 - 21:38	DerekRollend	maps_screenshot
	mission_1.jpg	manage	129.1 K	31 Jul 2007 - 21:50	DanielFrancis	Extracted from screenshots.zip
	mission_2.jpg	manage	409.6 K	31 Jul 2007 - 21:50	DanielFrancis	Extracted from screenshots.zip
	mission_3.jpg	manage	286.5 K	31 Jul 2007 -	DanielFrancis	Extracted from screenshots.zip

21:50

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