CS 499 Enhancement Two: Algorithms

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For this enhancement, my artifact is once again my Battleship clone. In the first Milestone, I ported it to Python. For this milestone, I further improved it by adding a UI and an AI player with their own separate board. Now that there is an AI player, there is also a clear lose condition.

Once again, passion is my reason for choosing this artifact. The ship placement algorithm is untouched from Enhancement 1, but I did improve the main game loop. The AI also uses a specific trick for randomly shooting that ensures no duplicate shots. I accomplish this by storing a list of all possible shots and removing from it every shot. The code quality was also improved as some unneeded variables were removed to save on RAM usage and performance (not that this app really needs a performance boost as it is very small). One last change is the change from pygame to pygame-ce. Community Edition adds support for newline characters and a text wrapping parameter in the render function for text that helped greatly with lining the text up neatly.

For this enhancement, adding an AI player and a UI required overhauling the main game loop. I brought in pygame (community edition) and made sure to not allow the AI to shoot unless the player shoots (a fix from the first enhancement). The UI checks for mouse placement properly and even has a debug key for debug mode (similar to the first enhancement).

I fulfilled all of my goals that I set out in module 1. I have a working UI, an AI player, and clear win and lose conditions. I didn’t get to add a salvo mode or multiplayer but those were more wishes than an achievable goal (though salvo mode wouldn’t be too hard to add). This week, the greatest challenge was definitely getting the UI lined up properly. This also required changing my Cell code in order to properly register UI clicks. I made to switch to pygame-ce when lining up all of the text due to this challenge. This definitely made me reconsider how difficult UI placement is for text.