**Sea Rescue One-Button Game**

1- **Summary**

The goal of this game is to rescue all survivors of a recent accident. You are part of a rescue team that operates on a fast motor boat and can carry one survivor at a time to the coast guard safe zone.

The boat has FUEL, HEALTH, and MONEY properties which depending on the mileage and accidents you have will be decreased. You cannot approach the survivors too quickly, or you will lose some health points. Each survivors gives you $500 reward money that you can use to buy gas or repair the boat.

Each level of the game have different number of survivors, and it is timed. If the time is up, you will lose all the money but can start from the same level.

2- **Key Algorithms**

Choice of VB.NET Windows Form for developing a game was a poor choice with lots of performance and visual limitations, but the end result is acceptable. The game design started with animating a boat sprite on a blue background.

i- **Boat Movement**

The boat direction can be set by clicking the button several times (clock-wise circular motion) and holding the button will accelerate in the current direction.

After a little of playing time, it was decided that the boat movement is not very fluid, so the ease-in and ease-out functionality were added to the boat. The boat has a starting acceleration and stopping acceleration which leads to a very smooth motion and introduces some skidding on the water after the button is released.

ii- **Collision Detection**

Collision between the boat and the boundaries, boat and the ship wreckage, and boat and survivors (in case of approaching them with a deadly speed) is used to change the value of “health” property.

iii- **Coast Guard Safe Zone/Drop Location**

Drop location for the survivors are at the top left corner. The boat driver should be careful not to damage the boat by crashing into the boundaries.
iv- **Gas Station and Repair Shop**

Gas Station and Repair Shop algorithms detect presence of the boat in the designated area, and start fueling/repairing the boat if enough money is available.

v- **Random Survivors Spawn**

The survivors are spawned randomly around the ship wreckage, but they are not completely isolated from each other.

vi- **Random Survivors Movements**

Survivors swim a little left and right randomly to create an illusion of them being floating in the water.

vii- **Time**

Timers are used to time each level and reset the game if needed.

viii- **Synchronized Sounds-FX**

Sound effects are synchronized with boat movements and each task to create an immersive game.

3- **Bottlenecks and Limiting Factors**

VB.NET forms are not quick to redraw and they cannot support transparency. These has made the game look very plain. Also, using timers to animate characters introduces some jitters and lags.

This game is designed on a Windows 10 bootcamped on MacBook Pro with Retina display, and as a result the native resolution is huge. It introduced undesirable hassles in creating videos for demonstration, and probably would not look great on a machine with a normal display resolution.

4- **Design Perspective**

The original idea was for the boat to operate in a disaster area like a tornado, and survivors move into the tornado in a spiral motion using flow-fields. The idea was great but implementing it was not very straightforward.

The current theme initially had some additional features. Since the boat has initial acceleration, stopping distance, mileage per gallon (MPG), maximum speed, damage scale, and maximum number of survivors it can carry, the original plan was to have a “boat fare” so the player can buy new and bigger boats to be able to rescue more people and enjoy different maneuver opportunities of each boat/ship.