Apeture Bioscience Laboratories

Progress Report 1 for NICView: A Virtual NICU Simulation

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Professor Walker

Amy Young, Caitlin Li, Jennifer Duan, Pamela Wu, Lindsey Sumners

I.   Achievements for the Week

In the past two weeks, we have met with our project sponsor, defining and outlining the first situation that we will program into NICView. It involves a term baby who is born, but not breathing or vigorous. It instructs the student to check vital signs before inserting a breathing tube to determine the best course of action for the patient. This is a timed exercise, with optiumum performance coming prior to the thirty second mark. There are only two possible outcomes to this scenario (the baby begins to breath and the baby gets progressively worse until the error is irreparable), so the situation will be simple enough for an initial program.

After meeting with our project sponsor, we visited the Neonatal Intensive Care Unit at the Vanderbilt Hospital. We got to observe the residents and attendings in action, as well as view the layout and machinery of an actual NICU. Dr. Krakauer took us on a tour of the various bays and told us some baseline statistics for an average premature baby (breathing rate, heart rate, pulse, and oxygen levels). Later in the week, our group got to view a physical doll simulation, which our virtual program hopes to imitate. Once we knew the basic outline of the NICU and the necessary components that we would need to implement in our program, we were able to choose a programming software to develop our simulation. For this task, we chose Unity, a free, open party, 2D/3D game development software.

Finally, after gathering all of our budget data and figuring out the software costs, we were able to create our NCIIA grant proposal. The proposal consisted of our plan for the project, possible costs, the resumes of the members involved, and the roles of various members of our team.

II. Deviation from the Plan

One slight deviation we made from our initial plan was that we changed from HTML5 coding to an established game development software.

We also had to choose a new initial scenario for our simulation because the initial scenario Dr. Krakauer laid out became too complicated and had too many branches for a simplified initial design.

III. Corrective Action

Using established game software will require us to go through and learn this interactive 3D software by studying manuals and tutorials. These tutorials were divided by group member.

In order to choose a new software, we had to explain to Dr. Krakauer that we wanted a simple baseline to get the initial design and coding down, then we could develop a more sophisticated simulation. After further review she concurred, and we reached a middle ground with a two-branched decision tree.

III. Plan for Next Week

By our meeting next week, each group member will review their selected tutorial and present it to the rest of the group so that we can better familiarize ourselves with the software. We will then divide up initial game design into characters, environment, and background layers.

Next week we will have another meeting with Dr. Krakauer. She will have one more scenario for us that we can begin to implement after we have our initial design down. This visit will take place at the design loft, so there will not be another NICU visit scheduled for this week.