3D Printing Airway Trainers: BME 301

Dates: 1/31/25- 2/7/25

Client: Kristopher Schroeder, MD
Advisor: Prof. Beth Meyerand

Team:
Matt Sheridan (Communicator)
Dan Altschuler (BWIG and BPAG)
Cody Kryzer (BSAC)
Lance Johnson (Leader)

Problem Statement

Airway management is an integral part of keeping a patient stable in many medical environments. While training medical practitioners with simple airway trainers has improved patient outcomes, this has not had the same effect on patients with abnormal airways. The use of 3D printing from existing patient imaging to create realistic and individualized airway manikins would assist medical professionals, allowing them to practice airway management skills on lifelike models.

Brief Status Update

The team met with the client to better understand airway management techniques and further discuss project goals and ideas. The team also continued research of difficult airway management and relevant intellectual property rights. Lastly, the team worked to synthesize the research and goals of the project by completing the Product Design Specifications.

Weekly Goals and Accomplishments

- Team
    - We met with the client at the hospital and learned about airway management techniques, discussed project goals, and acquired the client's basic airway trainer
- Matt Sheridan
    - Researched information pertaining to the PDS to establish initial design requirements
- Dan Altschuler
    - Completed research and wrote out parts of the PDS
    - Took notes during the client meeting and asked key questions to determine clients wants and needs
- Cody Kryzer
    - Met with the client to discuss the semester
    - Worked on Product Design Specifications
- Lance Johnson
    - Researched MRI segmentation process and 3D printing models of biological tissue
    - Took notes during the client meeting
    - Contributed to the PDS

Upcoming Goals

- Team
    - Prepare for the advisor meeting on Monday and begin work on a 3D printing plan
- Matt Sheridan
    - Research segmenting and other possibilities for taking CT scans and creating accurate/precise models
- Dan Altschuler
    - Continue research into competing designs
    - Start looking into 3D printing methods and look to acquire the MRI/CT scans for the project
- Cody Kryzer
    - Continue research on airway trainers and airway anatomy
    - Potentially reach out to Mr. Wille or contact radiology department
- Lance Johnson
    - Continue research into CT/MRI scan segmenting and the printing process
    - Meet with a member of last semester's team to discuss the project and see if they have any materials/prototypes that we can use