3D Printing Airway Trainers: BME 400

Dates: 11/2/25 - 11/06/25

Client: Kristopher Schroeder, MD
Advisor: Dr. Paul Campagnola

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

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 is going to complete outreach on Friday. The team is also working on segmenting the scans that we got near the start of the semester so that we can continue work adding it to our facial manikin.

Weekly Goals and Accomplishments

- Team
    - Met with Professor Puccinelli about our outreach activity
- Matt Sheridan
    - Finalized outreach activity with teacher and got approval from Professor Puccinelli
    - Made negative scans to attempt to print the negative to make our own silicone molds.
- Dan Altschuler
    - Completed outreach
- Cody Kryzer
    - Met with Tracy Puccinelli
    - Made slideshow for outreach
- Lance Johnson
    - Tested and finalized outreach activity with the team
- Elle Thom
    - Research on prototyping manikin

Upcoming Goals

- Team
    - Get the scans printed
    - Do the outreach activity
- Matt Sheridan
    - Get prints of the airway and start attaching to a full manikin
- Dan Altschuler
    - Continue work on the manikin design
    - Continue to segment and test software
- Cody Kryzer
    - Segment scans
    - Present outreach
- Lance Johnson
    - Prepare for the outreach activity
    - Add an esophagus to the most recent MRI airway scan and 3D print using elastic resin
    - Continue working on the manikin and building neck adjustment mechanism
- Elle Thom
    - Make the prototype
    - Present outreach