

# 3D Printing Airway Trainers

## Progress Report 10

**Client:** Dr. Kristopher Schroeder

**Advisor:** Dr. John Puccinelli

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### Team:

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### Problem Statement

Airway management is important in keeping a patient stable in various medical environments. While novel techniques and innovative devices for better airway management have decreased the difficulties medical professionals face, developing airway management skills in difficult and unique scenarios is essential to positive and effective patient outcomes. Developing a method of using 3D printing and existing patient imaging to create realistic airway training manikins would allow medical professionals to practice airway management skills with physiologically consistent results.

### Brief Status Update

The team's main focus this week was printing all parts needed for the base of the airway, and continuing to model as much as possible with the amount of airway imaging available

## Summary of Team Role Accomplishments

- Maribel Glodowski
  - Completed modeling the interior components of the trainers
  - Began creating and organizing documents needed to complete the final deliverables
- Jack Sperling
  - Continue writing documentation guiding the post processing aspect of the model in SOLIDWORKS
  - Troubleshoot errors that are occurring when turning an STL into a mesh object
  - Met with Jesse to determine if it is feasible to work with the STL files, options look unlikely
  - Working with Elle to respond to RADIUS lab request for consent forms and IRB approval
- Maiwand Tarazi
  - Continued searching for open access CT head and neck scans that are unrestricted; found one database with chest (lower neck) CTs
  - Noted difficulties in lab notebook regarding obtaining open access CT head/neck scans
  - Waiting for response from Synopsis – seems unlikely
- Elle Heimer
  - Updated lab archives
  - Communicated our progress with client
- Nathan
  - Attended for BSAC meeting
  - Prepared for BSAC exec meeting
- Ilia
  - Continued modifying the SOLIDWORKS base design
  - Visited the makerspace to inquire about options for rendering the headpiece of our model

## Weekly/Ongoing Difficulties

- Procuring a DICOM file of an airway

### **Upcoming Team and Individual Goals:**

The team's goal is to finish the fabrication of feasible parts and start testing.

- Maribel Glodowski
  - Continue adding printed pieces to enhance the functionality of the trainer base
  - Perform FEA on the SolidWorks-designed pieces
  - Continue working on final deliverables
- Jack Sperling
  - Try out OnShape to see if STL tools are better
  - Discuss with the client the realistic potential of creating the model in Slicer compared to asking an RT to segment for us
- Maiwand Tarazi
  - Continue searching for unrestricted open-source head/neck CTs
  - Work on final deliverables
- Elle Heimer
  - Work on final deliverables
  - Prepare poster presentation
- Nathan Klauck
  - Further develop airway trainer model and modeled other pieces in onShape
- Ilia
  - Finalize slides for presentation
  - Practice presentation with team to ensure it is cohesive



