Recap:

Overall

* Our team has been using 3D printing to manufacture functional stethoscope components
* In addition to exact replicas, our team has introduced voids and compartments to house electronic sensors to increase the functionality to our stethoscopes (Figure 1)
  + Accelerometers have been integrated to determine orientation of the stethoscope head
  + Microphones have been integrated to transform our prototypes into electronic stethoscopes
* Our team completed the first prototype of an electronic stethoscope which uses Arduino interrupts to stream audio from a microphone to an audio sink (e.g. speakers or headphones) (Figure 2)
  + Potentiometers are used for pitch shifting and volume control
  + The Adafruit-WAV Shield allows for the Arduino microcontroller to modify audio signals, store signals in .WAV extensions, and output signals to the connected sink
* Our team acquired 3M and Welch Allyn stethoscope parts, in order retro-fit or adapt designs into products already in the market (Figure 3)

Moving Forward:

Overall

* Our team will finish assessing the capabilities of the Adafruit-WAV Shield in order to determine the hardware necessary to achieve our objectives
  + The individual hardware components will then be listed for assembly of a custom PCB
* Our team will generate the algorithms capable of acquiring data coming from the sensors (accelerometers and microphones)

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| C:\Users\flobo\Google Drive\UCF\IST\CSEC\Progress Reports\Media\Figure2.png |
| Figure 1: 3D Printed Stethoscopes with embedded sensors |

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| Figure 2: First prototype of Electronic Stethoscope |

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| Figure 3: Commercially-available stethoscope parts |