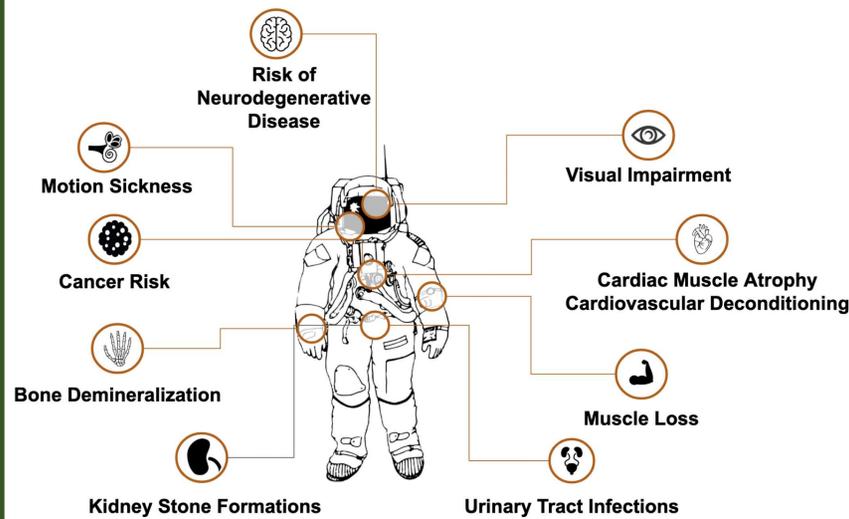


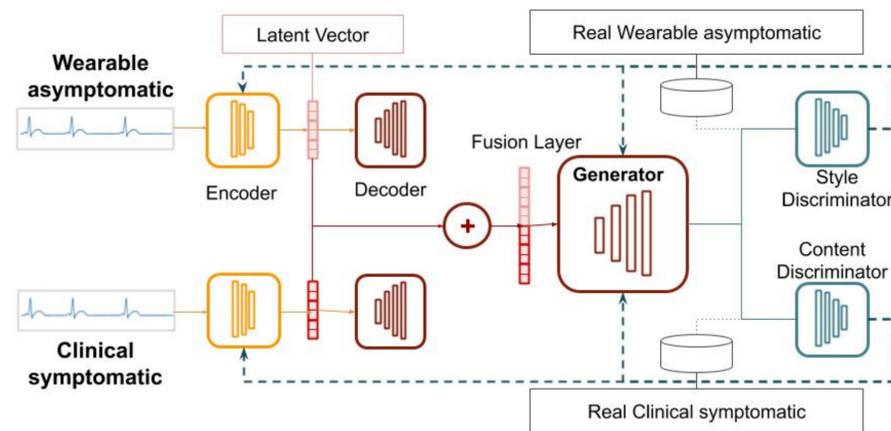
Researchers: Brian Wang, Eleni Antoniadou, David Belo, Krittika D'Silva

Mentors: Annie Martin, Brian Russell, Graham Mackintosh, Tianna Shaw and Frank Soboczanski

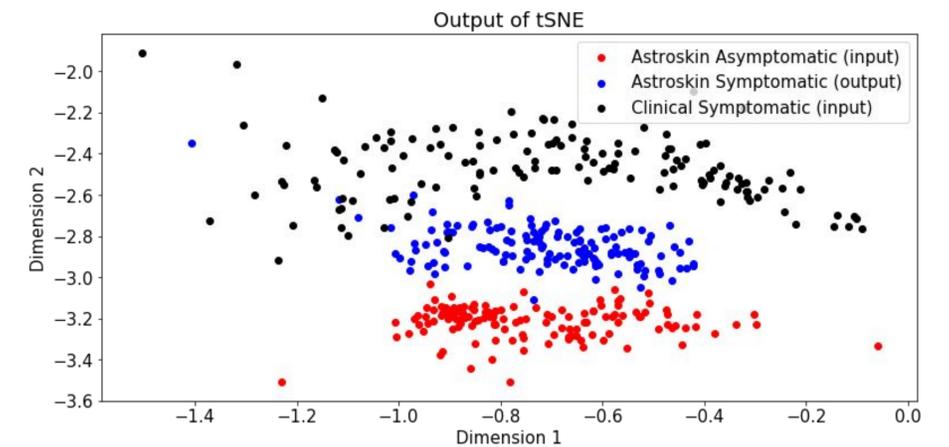
The Effects of Radiation and Microgravity on Astronauts



Our Model Architecture



Results



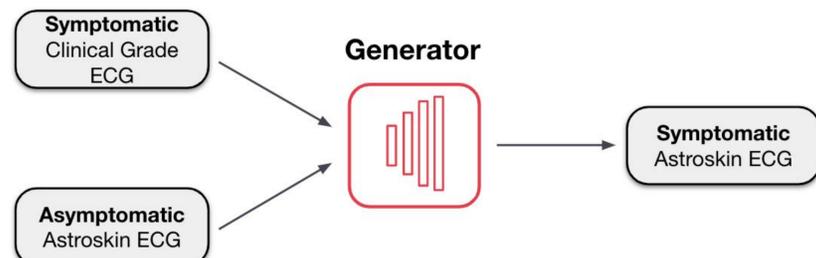
Datasets Utilized

Clinical ECG Data:

- Fantasia (490 hours of Asymptomatic ECG)
- MIT-BIH (95 hours of Atrial Fibrillation)

Wearable ECG Data:

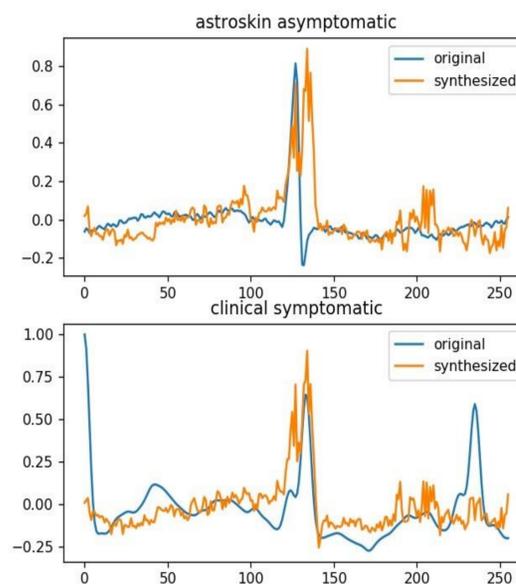
- HERA Mission data
- NASA data
- CSA data



Preliminary Validation

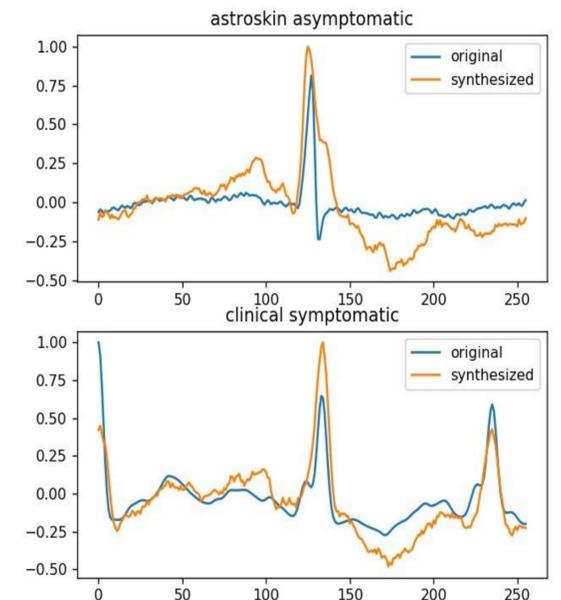
Method A: Generator trained with MSE alone

- R peak and RR interval analysis demonstrated slight variation in synchronicity versus the original for both datasets
- Model yielded a noise pattern approximating >85% Astroskin wearable
- **Mean squared error: 7.79**



Method B (our approach): Generator trained with style, content and MSE

- Higher signal variability
- QRS complex closely approximates original source
- Outcome produces significantly less noise
- **Mean squared error 3.04**



Conclusion: By incorporating the style of a wearable device and the content of a pathology, our model can synthesize symptomatic health care data for astronauts.