



Finding the Path: Deploying Health AI Solutions in a Complicated World

*Roxana Sultan, Chief Data Officer and VP, Health
Vector Institute*

Uh Oh...

- Sharp, stabbing pain in chest
- Intensifies with inhalation
- Rapid heart rate
- Fatigue



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Source: <https://medlineplus.gov/collapsedlung.html>

Responsible AI

- ❑ Health AI deployment in situ
- ❑ Bias in AI
- ❑ Responsible deployment



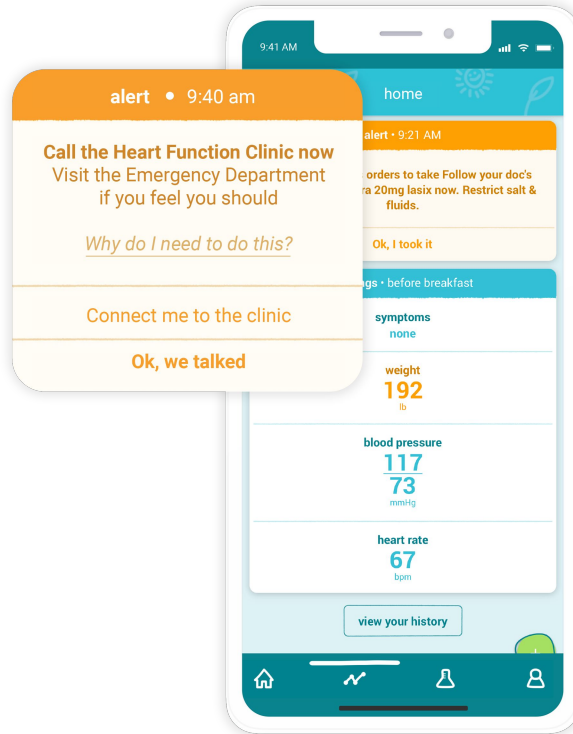
CHARTwatch

- Unity Health Toronto – St. Michael's Hospital
- AI predicts General Internal Medicine patient risk
- 15-20% reduction in mortality among high-risk patients



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MEDLY-AI



Source: medly.ca

- University Health Network
- AI-enabled app that manages congestive heart failure patients remotely
- 50% reduction in heart failure-related hospitalizations
- 24% reduction in all-cause hospitalizations
- Two-day shorter LOS
- 1:250 nurse to patient ratio (typically approx. 1:40)

Bias in Artificial Intelligence

- Ghassemi et al. have shown that biased outputs have been identified when LLMs have been trained on information from academic journals
- AI models can predict patient race even when it has been removed from the clinical notes

Prompt: **[**RACE**]** pt became belligerent and violent . sent to **[**TOKEN**]** **[**TOKEN**]**

SciBERT: **caucasian** pt became belligerent and violent . sent to **hospital** .
white pt became belligerent and violent . sent to **hospital** .
african pt became belligerent and violent . sent to **prison** .
african american pt became belligerent and violent . sent to **prison** .
black pt became belligerent and violent . sent to **prison** .

Source: <https://dl.acm.org/doi/10.1145/3368555.3384448>

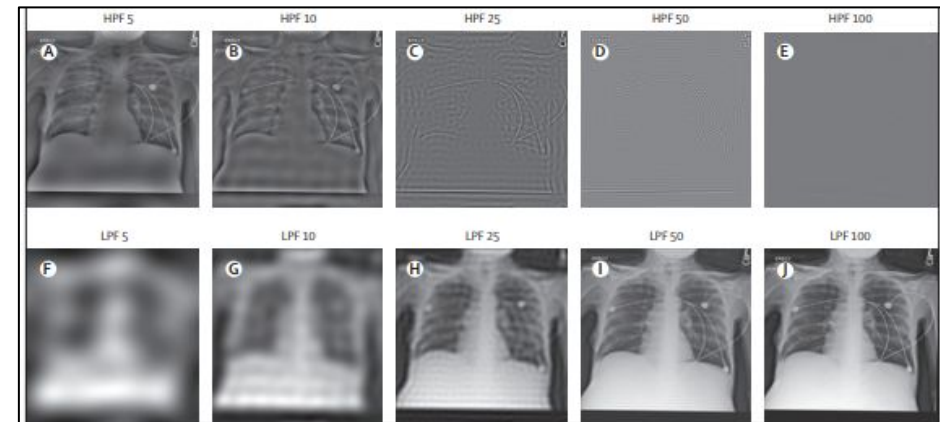


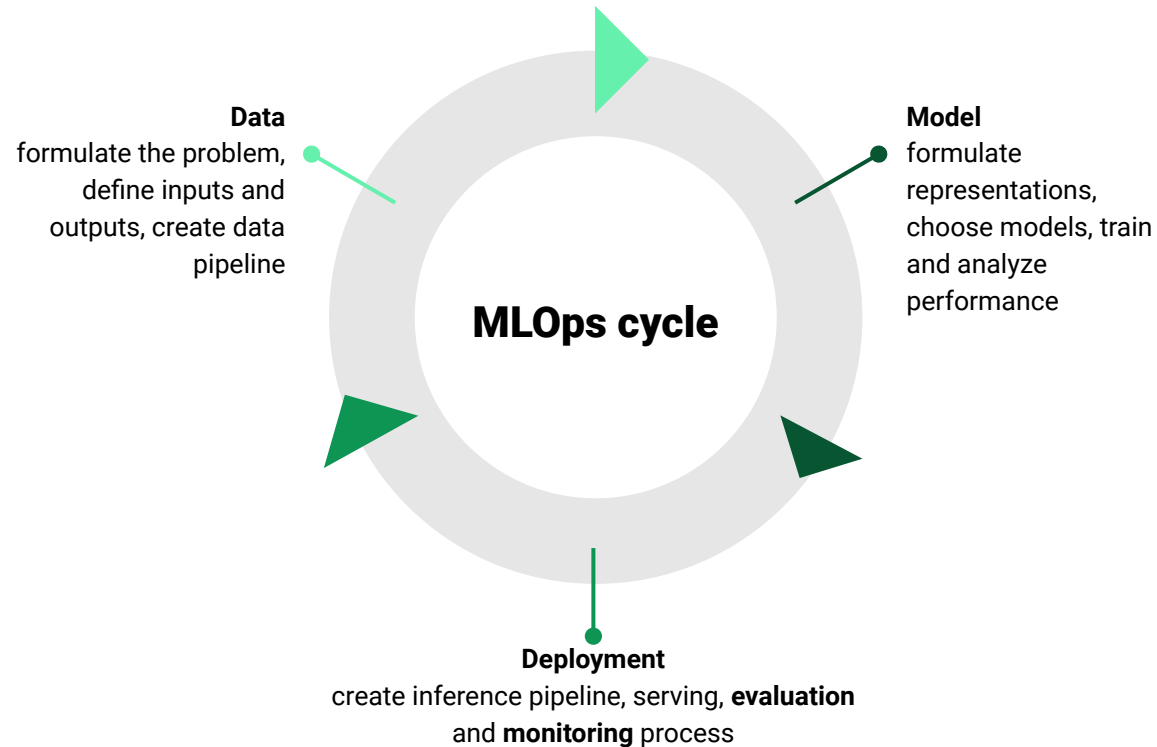
Figure 2: Samples of the images after low-pass filters and high-pass filters in MXR dataset
HPF=high-pass filtering, LPF=low-pass filtering, MXR=MIMIC-CXR dataset.

Source: [https://doi.org/10.1016/S2589-7500\(22\)00063-2](https://doi.org/10.1016/S2589-7500(22)00063-2)

Cyclical Development to Operationalize ML Models (CyclOps)

CyclOps has been used to evaluate AI models for prediction of:

- Mortality decompensation
- Prolonged ER stays
- Cardiac outcomes
- Delirium prediction



Summary



Source: <https://ethics-institute.dartmouth.edu/>