

Atapir: Continuous Patient Monitoring

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Problem

Current monitoring systems are:

- **Expensive** (\$25-30,000/bed/year)
- **Difficult** to setup and work around
- **Uncomfortable** for patients



Situation in hospitals:

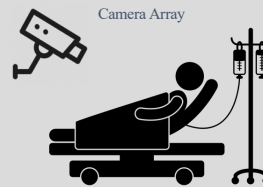
- Nurses are **overworked**
- **40%** of deaths occur in unmonitored wards
- **60%** of these are preventable



MTM Group: Needs Statement

Hospitals need a more effective way to monitor patient **blood pressure** for patients in general wards to prevent the deterioration of their condition to cardiac or respiratory arrest, which leads to 292,000 deaths per year, over half of which could have been prevented with better continuous monitoring.

Solution: Continuous, Non-Contact Monitoring



Completed Parameters: HR, RR, O2 Sat

Most Requested Parameter: BP

- Clinical indicator of cardiac arrest
- No non-invasive monitoring method
- Most time consuming to collect

Vital Signs (HR, RR, O2 Sat, BP)

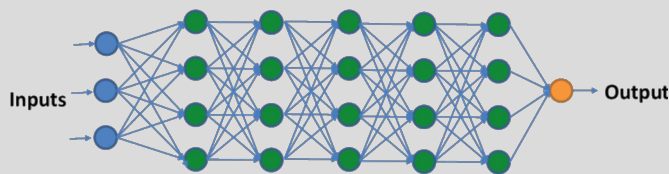


Software

Developing a Blood Pressure Algorithm

Goal: Create an algorithm that can continuously measure a patient's blood pressure from the camera system.

Explicit	Deep Learning
Utilize photoplethysmography (PPG) and the relationship between pulse transit time (PTT) and BP to develop an explicit algorithm.	Train a deep learning model using video data collected from 120 patients in the hospital (ICU), with NIBP or arterial line data as ground-truth.



Intellectual Property

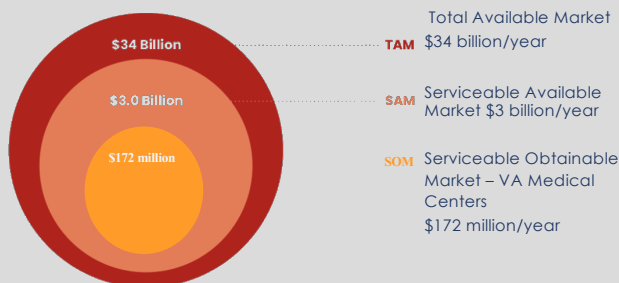
Patentability:

- 2018 Provisional Patent
- 2019 Patient Filed: pulse ox, heart rate, respiratory rate, stroke, out of bed alarm, video call system
- 2023 Provisional Patent Filed: 30 claims including a platform for monitoring pain, depression, etc.

Freedom to Operate:

- Exclusive license from VA and UCSF

Market Analysis



Next Steps

1. **Finalize** a method of obtaining ground-truth data from medical monitors in video feed.
2. **Develop** a deep learning model to predict blood pressure from video feed input.
3. **Improve** explicit algorithm based on information from current literature.

Acknowledgements

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