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ICU improvement study

Interim project report

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Challenge

Data analysis



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Aim: Reduction of **false positive** alarms within ICUs of MensSana.

Current MensSana evaluation:

Total	~ 800 Samples
True positive	12.5 %
True negative	55 %
False positive	31 %
False negative	1.5 %

$$FPR = 0.36$$

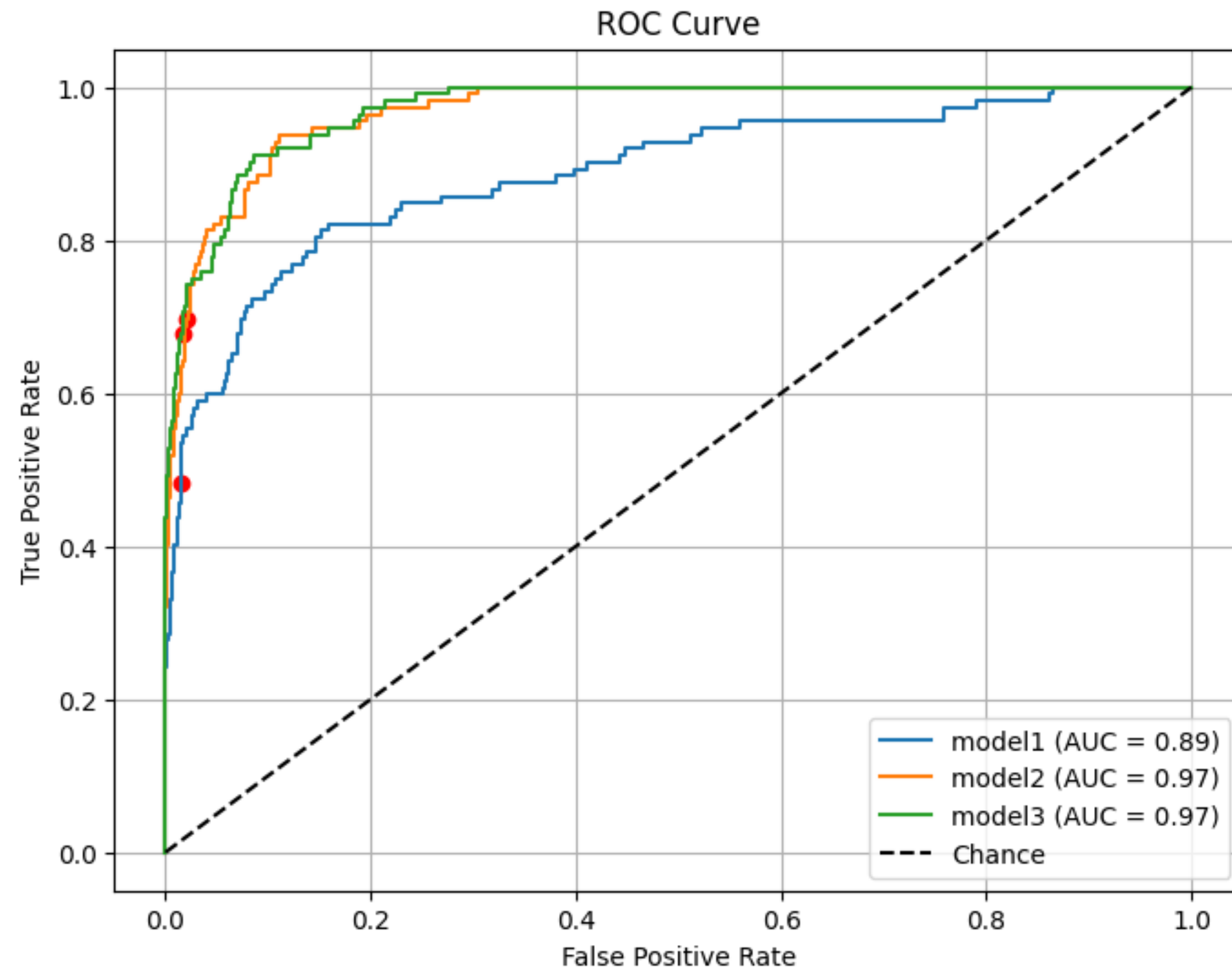
31 % $\hat{=}$ 249 patients

249 patients \cdot 2 min

\sim 500 min $\hat{=}$ \sim 8h

Model evaluation

Comparison of trained models



Model	FPR	TNR (Specificity)	TPR (Sensitivity)	ACC
MensSana	0.37	0.64	0.89	0.67
Model 1	0.02	0.98	0.5	0.92
Model 2	0.02	0.98	0.7	0.94
Model 3	0.02	0.98	0.69	0.94

Model selection

Ethical considerations

- Currently: Trade-off between FPR and sensitivity value
- High Sensitivity ensures critical cases are not missed
- Low FPR avoids overloading medical staff and reduce unnecessary interventions
- Current **MensSana**: Reduced risk of undetected alarms
- **Model 2**: Prioritizing of system efficiency

Impact of AI model

Feature steps

Next steps:

Continuously gather data to further improve model performance.

Feature idea(s):

Display alarm confidence scores from model 2 in combination with the current MensSana setup.