ida
lab.

ICU Improvement Study

Interim project report

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Challenge

Data analysis

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 %

$$FPR = 0.36$$

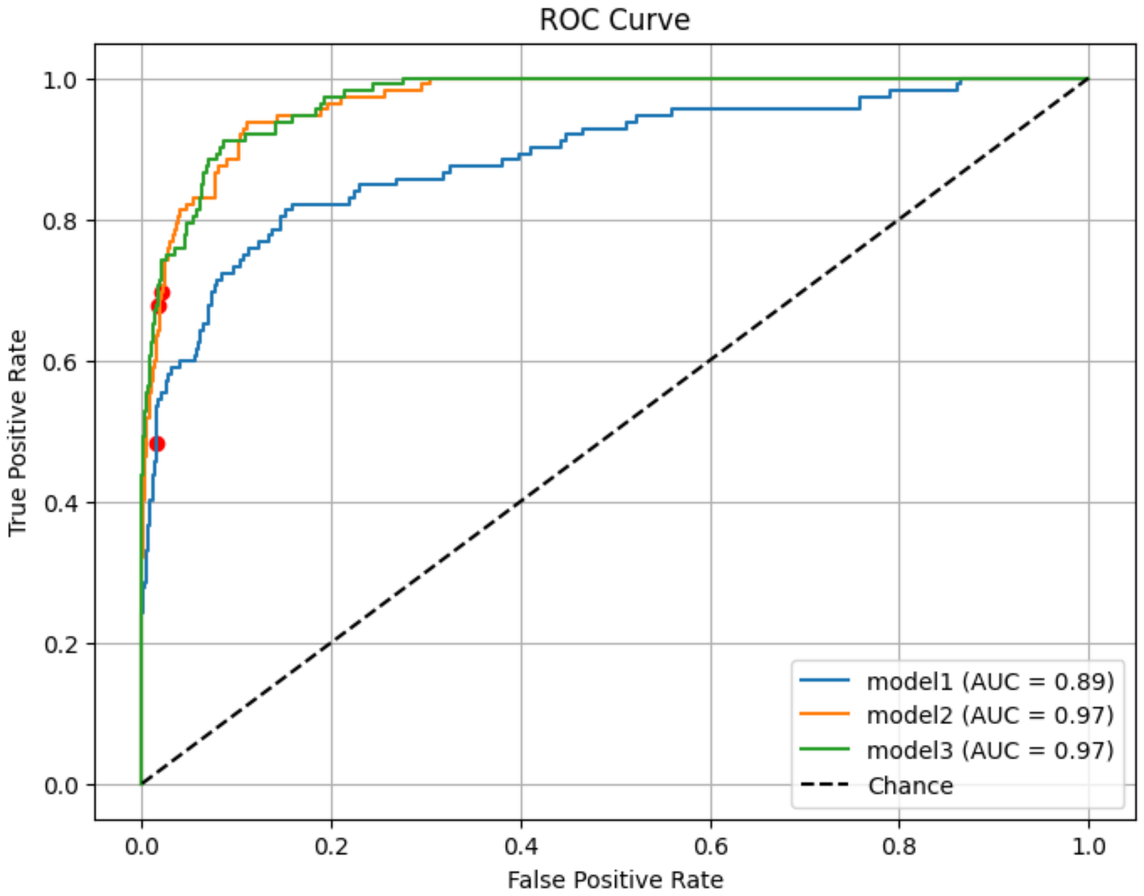
$$31\,\% \mathrel{\hat{=}} 249 \text{ patients}$$

$$249 \text{ patients} \cdot 2 \text{ min}$$

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

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

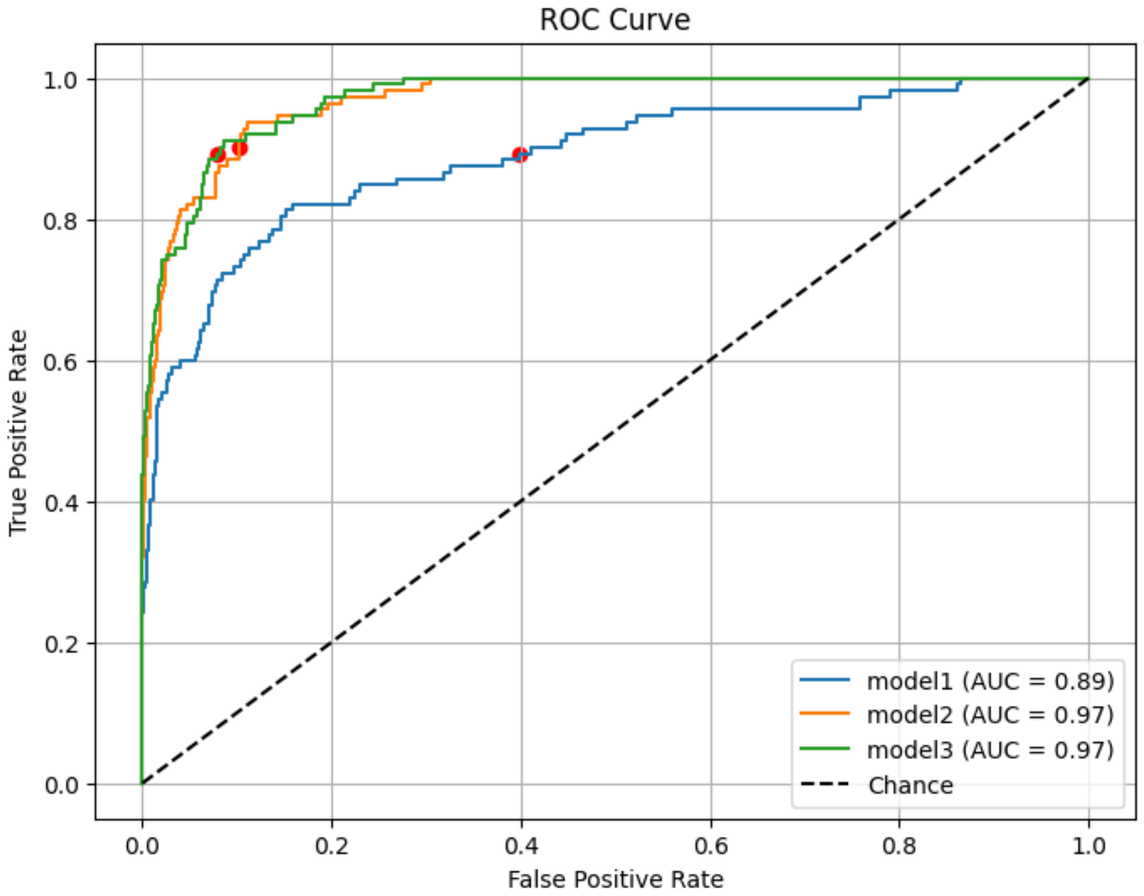
Model selection

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

Model evaluation

Comparison of trained models



Model	FPR	TNR (Specificity)	TPR (Sensitivity)	ACC
MensSana	0.37	0.64	0.89	0.67
Model 1	0.42	0.58	0.9	0.62
Model 2	0.1	0.9	0.91	0.9
Model 3	0.08	0.92	0.89	0.92

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 3 in alongside the current MensSana monitors to enable a test setup in the clinic’s daily routine.

If this is successful:

Discuss replacing the MensSana system with Model 3.