An Interface for Confidence-Aware Predictive Model Evaluation: Integrating MED3pa into MEDomics Platform

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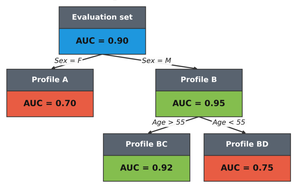
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Predictive Performance Precision Analysis in Medicine

BACKGROUND

A single global metric can hide where a model fails. MED3pa scores predictive confidence at three levels: patient · profile · population, to reveal when a prediction can be trusted.

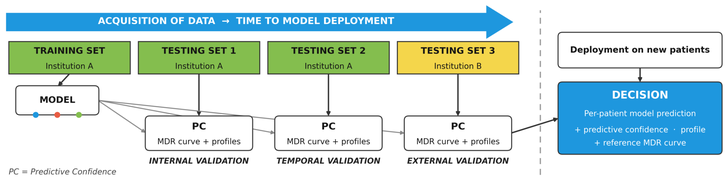
Profiles expose hidden subgroup failure



A model exists, but should we deploy it for this patient?

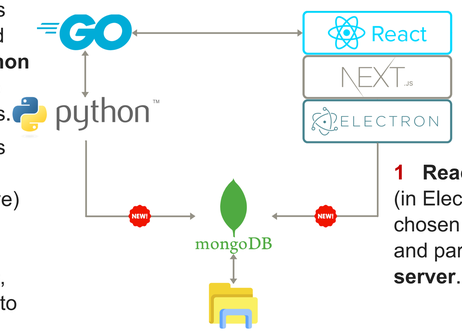
A global AUC of 0.90 looks strong. By recursively splitting the cohort into interpretable **profiles**, MED3pa exposes subgroups where reliability collapses (**red**), which the overall metric alone would hide, letting clinicians withhold or re-check those predictions.

From validation to a per-patient decision



METHODS

A three-tier desktop application. A thin React interface sits over a Go service that orchestrates Python, with every analysis persisted in MongoDB.



2 Go validates the request and **spawns a Python subprocess** to run the analysis.

3 Python runs the **MED3pa package** (above) and writes the confidence profiles, scores, and MDR data to **MongoDB**.

1 React / TypeScript UI (in Electron) sends the chosen model, dataset, and parameters to the **Go server**.

4 React queries **MongoDB** directly to render the interactive results and reopen saved sessions.

Every prediction returns a 3PA recommendation:

Prediction approved	Use with caution	Prediction rejected
confidence above DR threshold	patient in a low-performance profile	confidence below DR threshold

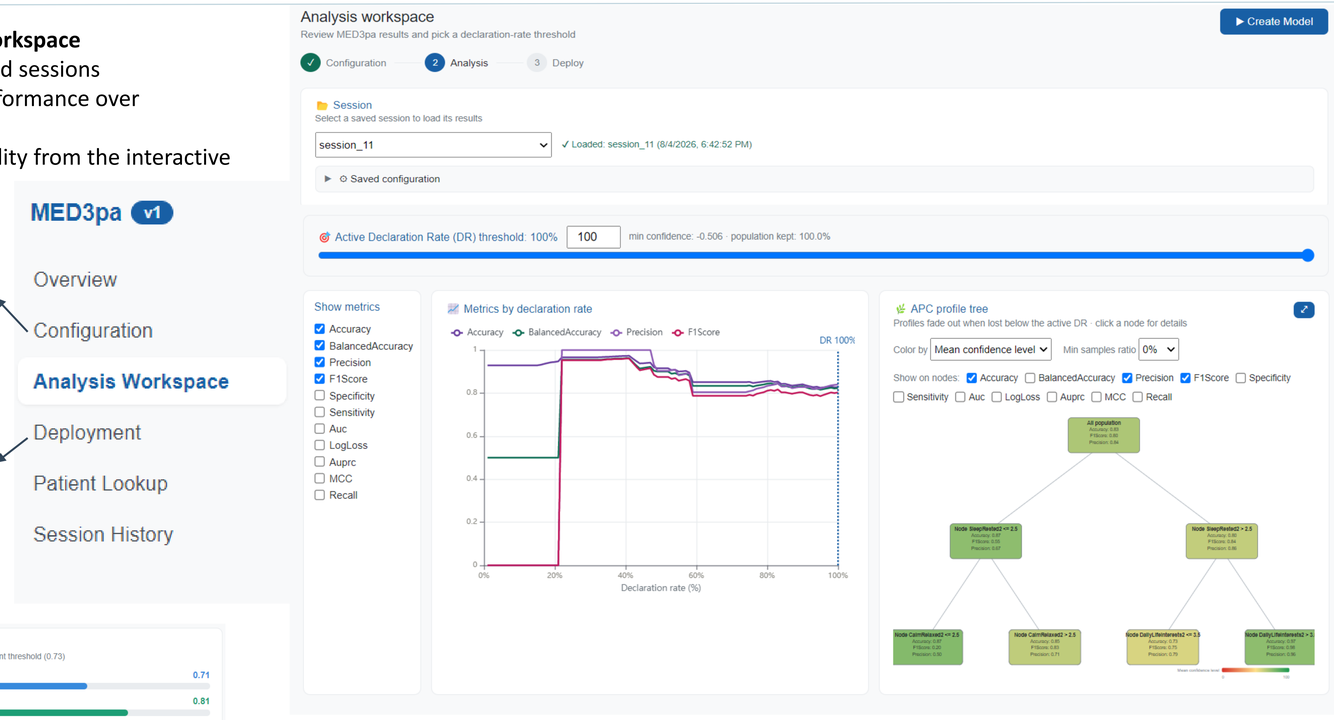
SYSTEM

A guided, no-code workspace

- Load or revisit saved sessions
- Analyse model performance over Declaration Rate
- Read profile reliability from the interactive APC tree

Configuration
Import a trained base model (.pkl or .onnx) and set the hyperparameters MED3pa will use.

Deployment
Select a model with its attached MED3pa analysis to predict on new patients — each with a confidence score and Accept / Caution / Reject recommendation.



RESOURCES

Scan for docs, code, videos & more

Ways to learn more:

- ☐ **GitHub** — code, releases, issues
- ☐ **GitBook** — docs, tutorials, demos
- ☐ **YouTube** — video walkthroughs
- ☐ **Discord** — chat with the team

WEBSITE: med3pa.app

CONCLUSION

Lowering the barrier to trustworthy clinical AI

Embedding MED3pa's confidence-based reliability analysis into a no-code platform lets users judge when a model's output can be trusted for a given patient.

This supports safer, more transparent AI-based decision support in clinical settings and extends MEDomicsLab's mission of making advanced medical-AI methods accessible without requiring programming expertise.

[1] Lefebvre O. et al. Predictive performance precision analysis in medicine (MED3pa I). J Am Med Inform Assoc 33(6):1100–1111, 2026.