

Kacper Saks

Process & Manufacturing Engineer (Aerospace) · Applied AI/ML — Modelling, Verification & Validation

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· Polish national (ESA Member State)

Aerospace process engineer (Airbus Defence and Space) with an independent applied-AI/ML research track centred on verification and validation. Three years developing technological processes, assembly sequences and control documentation for prototype and serial aircraft production; in parallel, building probabilistic models and reproducible validation pipelines — deflated performance metrics, combinatorial purged cross-validation, calibration and uncertainty quantification — and publishing the results (public preprint; Zenodo DOI). FEM-certified; CATIA V5, SAP ERP and Python in daily use.

PROFESSIONAL EXPERIENCE

Process Engineer — Airbus Defence and Space, Warsaw — Sep 2023 – present

Manufacturing Engineering department; progression: Intern (Sep 2023) → Junior Process Engineer (Jan 2024) → Process Engineer (May 2026).

- Develop technological processes, assembly sequences and control cards for parts and subassemblies in prototype and serial aircraft production (Airbus Poland and CASA/Airbus cooperative programmes).
- Optimised production workflows and material/fastener allocation, reducing assembly time — up to 30% efficiency improvement and ~€50K annual cost savings.
- Verify existing processes against new technical developments and inspection-monitor process compliance at the workstation; implement changes requested by the design office.
- Define assumptions for tooling, special fixtures and control-measuring instruments; select tools on techno-economic criteria; normalise working time in developed processes.
- Deliver internal training on creating and using design and technological documentation; apply Lean standardisation and FOD discipline daily.
- Daily toolset: CATIA V5, SAP ERP, technical drawing / GD&T.

Co-founder & CTO — K&S Venture Group (Clashpoint.me) — 2024 – present

- Designed, built and operate an AI-driven sales-coaching platform end to end (FastAPI, PostgreSQL, Next.js/React, LLM features) — production-grade tool design, development and deployment.

INDEPENDENT RESEARCH — AI/ML, MODELLING & V&V

The Validation Crisis in AGI-Timeline Forecasting — public preprint, 2026

- Applied deflated performance metrics, probability of backtest overfitting (PBO/CSCV), combinatorial purged cross-validation and walk-forward analysis to quantify the out-of-sample reliability of published forecasts; fully reproducible, pre-registered pipeline.
- kacpersaks.dev/papers/validation-crisis-paper.pdf · github.com/Ricko12vPL/validation_crisis

worldclass-research-org — 38-agent autonomous research organisation — open source, Zenodo DOI

- Architected a multi-agent pipeline enforcing pre-registration and reproducibility across the empirical-research lifecycle; centrepiece pre-registered gate-calibration study with honest reporting of threshold failures.
- zenodo.org/records/20645678 · github.com/Ricko12vPL/worldclass-research-org

neo-triage — hierarchical Bayesian classification — manuscript in preparation

- NumPyro hierarchical Bayesian classifier with a LightGBM baseline for near-Earth-object triage; calibration, uncertainty quantification and a reproducible training pipeline.

X_Quant — large-scale model-selection & validation system — solo research codebase (~274K LOC)

- Out-of-sample validation over 529 instruments and 15 years of hourly data; DSR 2.73, PBO 0.025, 11/11 positive walk-forward folds with transparent reporting of remaining failure modes.

UAV water sampling in hard-to-reach reservoirs — Silesian University of Technology, 2021–2022

- Autonomous UAV sampling of post-industrial reservoirs for physico-chemical testing under PN-ISO safety compliance — hands-on mechanical engineering with autonomous operations.

TECHNICAL SKILLS

- **Modelling & simulation:** FEM — linear and nonlinear analysis, convergence and mesh-independence (certified); CATIA V5, Autodesk Inventor; Python numerical stack
- **Verification & validation:** combinatorial purged cross-validation, deflated performance metrics, PBO/CSCV, walk-forward, calibration & uncertainty quantification, pre-registration, reproducible pipelines; shop-floor process verification, control cards, SPC
- **AI / ML:** Bayesian modelling (NumPyro), gradient boosting (LightGBM), scikit-learn, PyTorch, SHAP; LLM & multi-agent pipelines

- **Manufacturing engineering:** technological process design, assembly sequencing, tooling & metrology specification, work-time normalisation, GD&T, SAP ERP, Lean / continuous improvement, FOD
- **Programming:** Python, SQL, TypeScript/JavaScript, Git

EDUCATION

- BEng, Mechanical Engineering — Silesian University of Technology (2018–2022); thesis: analysis of the feed mechanism of mining rigs and bolting machines; major GPA 4.17/5.0.
- MSc, Project & Process Management — Collegium Civitas (expected Aug 2026).
- Software Engineering — 42 Warsaw (project-based, peer-to-peer).

CERTIFICATIONS

FEA Convergence & Mesh Independence; FEM — Linear, Nonlinear Analysis & Post-Processing (Coursera) · Autodesk Certified User: Inventor · Introduction to Orbital Mechanics; Interplanetary Spacecraft & Satellite Engineering (Udemy) · Google Data Analytics · Python for Everybody (University of Michigan).

LANGUAGES & ELIGIBILITY

Polish (native) · English (professional working proficiency — daily working language at Airbus) · Holder of a national (Polish) personnel security clearance; experienced with export-control and classified-information regimes.