

# Dmitry Ivanov

Engineer — Simulation (CAE) · Production ML/MLOps · Applied AI (LLM/RAG) | 14+ years

Remote | Open to relocation

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[portfolio.dmitryivanov.dev](https://portfolio.dmitryivanov.dev) | [linkedin.com/in/dmitry-ivanov-ds](https://linkedin.com/in/dmitry-ivanov-ds) | [gitlab.com/dmitry-ivanov-ds](https://gitlab.com/dmitry-ivanov-ds)

## Summary

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Engineer with 14+ years across three connected competencies: simulation (CFD/DEM, HPC, digital twins), production machine learning (MLOps, Kubernetes serving), and applied AI (LLM/RAG agents). Led a simulation/HPC team from 2 to 10 engineers and delivered R&D-to-production validation at <5% deviation vs. field telemetry; shipped production AI systems end-to-end — CAE Copilot (traceable LangGraph + RAG copilot for engineering) and SoccerPredictAI (full MLOps platform). Verification-first mindset in every domain: models are judged against reality with explicit acceptance criteria, leakage-safe evaluation, and calibration. Open to remote roles and relocation.

## Key Achievements

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- Built and deployed CAE Copilot: traceable AI copilot for engineering workflows (LangGraph routing, Qdrant RAG with mandatory citations, Pydantic calculation tools, golden Q&A eval); Stage 2 shipped on Kubernetes.
- Led simulation-supported development of the H820 harvester — awarded AGROSALON Golden Star 2024 — with R&D-to-production validation at <5% deviation between model predictions and field telemetry. (Rostselmash)
- Built and deployed SoccerPredictAI — domain-agnostic proof of end-to-end MLOps discipline: 950,000+ matches across 26 years; served via FastAPI + Celery on Kubernetes with <500ms p95 latency.
- Reduced manual data extraction from ~8h/day to <30min/day (95% workload reduction) via OCR + NLP pipeline for 50,000+ MSDS documents in 12+ languages. (Chemwatch)
- Established CFD/DEM capability from zero at Gomselmash (2015); trained 3+ engineers; published calibration methodology in CADFEM Review (2020).

## Selected Projects

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### CAE Copilot — Engineering AI Copilot

May 2026 – Present

[Live app](#) | [Technical documentation](#) | [API \(Swagger\)](#)

- Engineering AI copilot: LangGraph routing, Qdrant RAG with mandatory citations, Pydantic calculation tools, structured reports.
- CAE docs corpus (9 manuals) ingested with page-aware chunks and metadata filters.
- Golden Q&A eval (14 cases): offline baseline 100% intent / citation / tool accuracy.
- Production layout: separate FastAPI + Streamlit images, multilingual-e5-base baked offline, Helm/k8s.

### SoccerPredictAI — Production ML & MLOps Platform

May 2025 – May 2026

[Live app](#) | [Technical documentation](#)

- Automated data ingestion for 950,000+ football matches across 26 years from 3 heterogeneous sources (Selenium/Selenium, CDP XHR interception, REST batch).
- End-to-end MLOps: DVC, Great Expectations data contracts, MLflow registry, nested Optuna trials; leakage-safe walk-forward CV.
- Serving on Kubernetes (FastAPI + Celery/RabbitMQ); GitLab CI/CD with quality gates; SOPS + Age secrets management.
- Observability: 11 custom Prometheus metrics, Evidently drift monitoring, Grafana dashboards.
- Holdout log-loss 1.006, ECE 0.004; 560+ automated tests; full technical documentation at [docs.soccer.dmitryivanov.dev](https://docs.soccer.dmitryivanov.dev).

## Professional Experience

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### Head of Simulation Modeling Bureau — Rostselmash (Rostov-on-Don, Russia)

Dec 2021 – Present

- Technical Leadership: scaled cross-functional simulation team from 2 to 10; engineering culture, simulation model review, standardized workflows.
- Simulation Workflow Automation: optimized data preparation and processing in simulation pipelines with Python (12× faster setup); PLM integration (Teamcenter).
- End-to-End Delivery: R&D to serial production validation (DEM/CFD, MBD/RBD & 1D system simulation) with <5% deviation vs. real-world telemetry; H820 harvester awarded AGROSALON Golden Star 2024.

**Data Scientist** — *Chemwatch (Part-time / Freelance, Remote, Australia)*

Jan 2021 – Jan 2022

- Built production batch pipeline for OCR + multilingual NLP on 50,000+ MSDS documents across 12+ languages.
- Confidence scoring + human-in-the-loop routing with CAS validation; 95% manual work reduction; 40% faster safety analysis.

**Lead CFD/DEM Engineer** — *Gomselmash (Gomel, Belarus)*

Aug 2012 – Dec 2021

- Built CFD/DEM capability from zero (from 2015); trained 3+ engineers; simulation-validated machinery projects (incl. structural FEA) over 9 years.
- Published calibration methodology (CADFEM Review, 2020); verification workflows: experiments → parameters → predictions.

## Research Highlights

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**CADFEM Review (2020):** Building a digital twin of grain crop material flow — DEM calibration and field verification.

Full list: [portfolio.dmitryivanov.dev/publications](https://portfolio.dmitryivanov.dev/publications)

## Technical Skills

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**Simulation & CAE:** Ansys Rocky, Fluent, Mechanical, Motion, Workbench; Siemens STAR-CCM+; Altair EDEM; MSC Nastran/Patran, Adams; RecurDyn; Simcenter Amesim; MATLAB/Simulink; SolidWorks; Autodesk Inventor; PTC Creo; AutoCAD; KOMPAS-3D; Ansys DesignExplorer, optiSLang; Ansys CFD-Post; EnSight; MathCAD; HPC; Ansys Python APIs; Teamcenter, Windchill PLM

**Machine Learning:** Python; scikit-learn; XGBoost; Optuna; pandas; NumPy; Feature Engineering; Model Evaluation

**MLOps:** MLflow; DVC; Great Expectations; Airflow; Evidently; Data Quality; Production ML

**Deployment & Production Engineering:** Docker; Kubernetes; Helm; FastAPI; Celery; RabbitMQ; CI/CD

**Applied AI & LLM Systems:** LangGraph; RAG; LLM; Qdrant; Vector Search; Pydantic AI Tools

**Data Engineering:** PostgreSQL; Redis; MinIO; Parquet

**Observability & DevOps:** Prometheus; Grafana; GitLab CI/CD; Monitoring; Observability; SOPS; Age

## Education

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**MSc in Mechanical Engineering**, Gomel Technical University P.O. Suhogo, Belarus

2016–2018

**BSc in Mechanical Engineering**, Gomel Technical University P.O. Suhogo, Belarus

2007–2012

## Certifications & Courses

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- LLM: From Understanding to Product — ODS.ai (2026)
- MLOps and Production in Data Science (2.0/3.0) — ODS.ai (2023/2024)
- Machine Learning and Data Analysis — Yandex / MIPT (2020)
- Introduction to Machine Learning — HSE University (2020)

## Languages

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**English:** Professional Working Proficiency (B2).

**Russian:** Native