

Jakub Jan Kowal

Cloud and DevOps Architect/Tech Lead

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Summary

Cloud/DevOps Architect with 10+ years of hands-on experience designing and delivering enterprise-grade, multi-tenant Azure, Data, and Kubernetes platforms in R&D and global financial institutions. Proven expertise in building secure, zero-trust landing zones in Azure, Platform Engineering, large-scale AKS deployments, generic and reusable IaC architecture (Terraform/Pulumi), Snowflake Data Platform, and monitoring/observability systems processing large volumes of data. Former Researcher (HPC/GPU/Distributed Systems).

Experience

2025-02–present **Mewb**, *K8S/Cloud Consultant*

Designing and implementing from scratch a zero-trust Kubernetes platform for processing sensitive medical data in a highly regulated environment. Architected and implemented a zero-trust, multi-cluster Kubernetes platform for sensitive medical data ensuring HIPAA/GDPR/SOC2 compliance. Designed and built secure networking and security stack using Cilium + eBPF, Istio Service Mesh, Tetragon (runtime security), and OPA/Gatekeeper (policy as code). Implemented multi-cluster orchestration with Karmada, GitOps with Argo CD + KArgo, and progressive delivery using Argo Rollouts, running on Talos Linux. Developed full observability platform with OpenTelemetry and LGTM stack (Loki, Grafana, Tempo, Mimir), including medical data anonymization pipelines. Created modular, reusable Infrastructure as Code using Pulumi + TypeScript, enabling consistent platform components across multiple projects.

2023-09–2025-09 **Simcorp**, *Principal System Architect/Tech Lead*

Cloud Azure deployments and architecture for an international financial corporation. Design of DevOps IaC/Cloud landing zone architecture in Azure for Dimension. Design of Landing Zone for AWS for Snowflake Data Platform. Multi-cluster architecture and management for AKS (Networking, Monitoring, GitOps, Security, Zero-trust). Data Platform Architecture based on Snowflake (Automation using Terraform and Azure DevOps pipelines, Security, Disaster Recovery, Integration with Services, Access Management, Monitoring, SOC2). Design of Entra ID federation with AWS Identity Center connected with Identity Governance. Design of Central Inventory configuration system using CosmosDB. Design of Event-Driven Pipelines using KEDA and Azure Functions. Architecture of OpenTelemetry Monitoring System (Grafana, Tempo, Thanos, Mimir, Prometheus) in k8s for 3-4TB of data per day with 3 years of data retention. Terraform modules implementation and integration with Azure DevOps pipelines. Ansible roles/unit-tests/custom modules/dynamic-inventory (Python, PowerShell). Preparing Technical Roadmaps for products.

2021-07–2023-08 **Simcorp**, *DevOps Tech Lead*

Cloud Azure deployments and architecture for an international financial corporation. Design of Disaster Recovery architecture for Azure/k8s. Design of sync application between AAD and AD in PowerShell based on AAD Graph API. Identity Governance/Access Packages for multi-tenant AAD. Ansible roles for Oracle deployment, Silk integration, monitoring and disaster recovery.

2020-06–2021-07 **Simcorp, Senior DevOps Engineer**

Cloud Azure deployments and architecture for an international financial corporation, contributing to multi-cluster AKS management, monitoring architecture, and IaC automation using Terraform and Ansible.

2019-08–2020-06 **Gfi East, Senior DevOps Engineer**

Large scale CI/CD system for the aerospace industry. Maintenance and development of ARM templates and PowerShell scripts. Development of a generic graph-based system for Azure using ARM templates and PowerShell. Development of a large-scale multi-stage pipelines generator based on PowerShell and Python. Development of network stack based on ARM templates, Terraform and PowerShell. Maintenance and development of global Disaster Recovery system. Responsible for CI/CD system based on Azure DevOps.

2017-08–2019-08 **Fitech, BigData/DevOps Tech Lead**

Industry 4.0 insurance policy system for fleets. Responsible for Big Data/ML architecture in Azure Cloud for Industry 4.0 projects (Predictive Maintenance). Responsible for CI/CD pipelines (Azure DevOps, SonarQube, Terraform). Responsible for generic logging system for cloud components based on ELK (ElasticSearch, Logstash, Filebeat, Grafana). Developing data analysis pipelines in Azure (Time Series data). Stream and batch processing using Spark.

2015-02–2017-05 **Comarch Healthcare R&D/Algo Team, Senior Machine Learning Engineer, Cracow, Poland**

Responsible for developing and maintaining a numerical library for processing Electrocardiograms (C++11). Porting Matlab scripts to efficient C++ code (memory, instruction optimization, conditional branch reduction). Developing and optimizing Digital Signal Processing and Machine Learning algorithms (Spark, MLlib, scikit-learn, TensorFlow, Keras). Developing floating-point precision tests (Catch, Google Benchmark). Preparing C++ wrapper subroutines for C# and Python. Profiling and benchmarking code using Intel VTune and Google Benchmark. Responsible for CI/CD system based on GitLab, Jenkins, SonarQube. Responsible for ML model evaluation metric pipelines in GitLab.

2011-10–2014-12 **Jagiellonian University, J-PET Research Team, Scientific Software Engineer, Cracow, Poland**

J-PET Image Reconstruction library: responsible for parallel numerical image reconstruction algorithms (Maximum Likelihood Estimation Method) and Monte Carlo System Matrix Generators for positron emission tomography. Developed vectorized Monte Carlo algorithms for J-PET prototype. Developed optimized CPU (SIMD) and GPU (CUDA) implementations. Achieved 25x speedup over vectorized (AVX) multi-core CPU code. Phi4 Project: responsible for parallel numerical Monte Carlo Simulations for 3D mesh QCD Landau-Ginzburg Model. Developed SIMT-optimized GPU (CUDA) global and shared memory implementations. Achieved 28x speedup over vectorized (AVX) multi-core CPU code. Experimental Intel Xeon Phi optimization for phi4 code.

Education

2011-06–2015-06 **PhD Student in Computer Science, Jagiellonian University - IPPT Polish Academy of Science, Cracow, Poland**

2006-09–2011-06 **Master of Science in Computer Science (SW Engineering, Numerical Modeling), Jagiellonian University, Cracow, Poland**

Skills

Cloud Platforms	Azure (AKS, Landing Zones, Network, Storage, Messaging, Entra ID, Cost Management), AWS (basic)
Kubernetes & Containers	AKS, Docker, Helm, Kustomize, Karmada, Cilium, Istio, KEDA, Chaos Mesh, Open Policy Agent, Cert Manager
GitOps & CI/CD	Azure DevOps, Ansible Molecule, Argo CD, Argo Rollouts, Trivy, Falco
IaC & Automation	Terraform, Pulumi, Ansible, Packer
Monitoring	Log Analytics/Monitor, Application Insights, Loki, Prometheus, Mimir, Thanos, Grafana, Tempo, OpenTelemetry
Data & Analytics	Snowflake (Data Platform), Oracle, ORDS, Qlik BI, Spark
Messaging	Event Hub, Service Bus, NATS
Programming	Python, PowerShell, C#, C++11

Languages

English	Professional
Polish	Native

Publications

- 2013 **GPU-accelerated and CPU SIMD Optimized Monte Carlo Simulation of 2D phi4 Model**
Jakub Jan Kowal
- 2014 **GPU-accelerated and CPU SIMD Optimized Monte Carlo Simulation of 3D phi4 Model**
Jakub Jan Kowal
- 2015 **GPU accelerated image reconstruction in a two-strip J-PET tomograph**
Jakub Jan Kowal
- Method for automatic detection of atrial fibrillation and flutter**
Jakub Jan Kowal