Ai-MicroCloud™ for Life Sciences

Zeblok's Ai-MicroCloud™ is particularly well suited to the needs of life sciences researchers, pharmaceutical clinical and commercial data scientists, biotech startups focused on new drug discovery, data scientists and/or data analysts in CROs focused on improving outcome from study design on behalf of sponsors and technology solutions providers for pharmaceutical and other life sciences companies.

Zeblok deploys its turnkey, cloud native, quantum-safe secured Ai-MicroCloud™ to wherever your data is secure – on-premises data centers, public clouds and edge locations.

Data scientists and data engineers can get started in minutes, with a simple UI, all familiar open-source frameworks, seamless HPC orchestration, a growing library of proven, curated AI algorithms, accelerated data lake and a broad network of AI solutions consulting firms. Zeblok's Ai-MicroCloud™ is the most straightforward way to efficiently pipeline data and then quickly & affordably to develop, train and deploy AI/ML models.

Why HPC Orchestration? Computationally intensive simulations, used in applications ranging from protein folding to in silico drug development, require high-performance computing (HPC) capacities.

Why Ai-Rover™? Analytics for clinical study design phase 1-3, patient selection, digital biomarkers, pharmacokinetics, pharmacovigilance demand a robust multi-variate data analytics capability.

Why Quantum-Safe Security? The post-quantum world poses a new level of threat to current data encryption technologies.

> *Zeblok's Ai-MicroCloud™ is extremely easy to use. We realized dramatic improvement in our simulations' performance.*

> *Ai-Rover™ is powerful and easy to use. We used it to identify novel endpoints and improve study design.*

Why Zeblok?

Ai-MicroCloud™: Proprietary multi-class, multi-cloud orchestration engine for AI workloads, including one-click HPC scalability

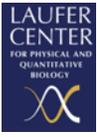**Enterprise Grade:** Quantum-safe security

Ease of use: Simple UI, leveraging open-source data science tools, enables data scientists to be productive in minutes

Intelligence Marketplace: Proven, original algorithms, ready for model integration

Accelerated Data Lake: 10-15x faster pipelines and faster integration of disparate datasets

Ai-Rover™: Domain-agnostic data discovery tool for large, multi-variate, high dimensional data analysis and data visualization, with patent-pending explainable AI, exclusive to Zeblok
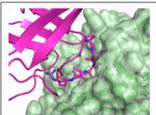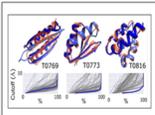
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NODEWEAVER — Reliable continuity for Your IT

RURAL CLOUD INITIATIVE — DIGITAL TRANSFORMATION OF RURAL AMERICA
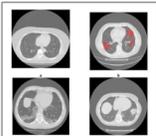
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Use Cases
Ai-MicroCloud™ for Life Sciences

Drug Discovery Insilico – Deep Neural Networks – SARS-CoV-2

Drug Discovery Insilico – Physics Simulations – SARS-CoV-2
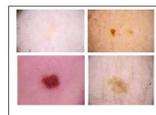
Healthcare – Lung Segmentation – Neural Networks – COVID-19

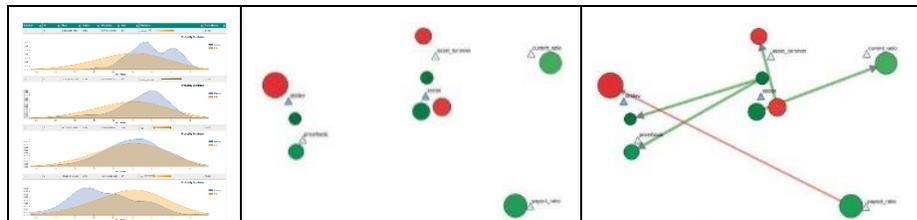Clinical Study Design – Novel Endpoints for Patient Insights

Healthcare – COVID-19 Epidemiology Insights

Healthcare – CNN-based Skin Cancer Classification

Ai-Rover™

Many life sciences researchers use their own simulations and may not be seeking to use other algorithms, but Zeblok Computational's Ai-Rover™ Notebook combines the power of Zeblok's Ai-WorkStation and accelerated Ai-Data Lake, with an exclusive Explainable-AI algorithm's three linked modules, enabling advanced analytics and data visualization to provide both correlation and causation. The journey from data to insights requires a crucial data comprehension step to focus AI appropriately. AI-Rover™ is a platform for data discovery and data comprehension as a first step in this journey, from different data sources and types and formats.

Data Patterns   Correlation   Causation

Pattern Miner automatically decomposes the data into a manageable set of statistically robust data patterns, each of which can be concisely described with just a few attributes. Each pattern consists of data items that behave similarly in terms of a given target variable and are succinctly defined by just a small set of attributes, making them easy to understand. This analysis typically only takes a few minutes.

Visual Causal Analyst distills correlations that exist among these patterns into a terse set of causal relationships. This process eliminates all spurious correlations and makes it easy to discern true interactions within the data.

Data Context Map provides integrated and intuitive visualization of both patterns and relationships.

Analysts can freely interact with this visual layout to explore new patterns and relationships, creating new subpopulations. Ai-Rover™ simplifies data analysis by combating information overload, while leading to better predictive insights.

Platform Features Overview

AI Platform-as-a-Service delivered as Ai-MicroCloud™, including **Turnkey HPC Orchestration** and an **Intelligence Marketplace** for curated algorithms

- **Ai-WorkStation:** Customized and virtualized Jupyter notebook, with access to all familiar open-source frameworks, accelerated data lake and AI algorithms via a simple web interface

- **Ai-HPC-WorkStation:** Turnkey workload distribution to hundreds of GPUs for AI/ML model development, training and simulations

- **Accelerated Data Lake:** Enables a 10-15x reduction in search time

- **Intelligence Marketplace:** Growing library of carefully curated original AI algorithms, including exclusively in-licensed patent-pending software

  Easy to read, easy to use and easy to share

  Fast-track adoption of the best AI algorithms from academia and AI startups

- **Cloud Native:** Scalable architecture running in modern, dynamic environments using containers and declarative APIs

- **Ai-Rover™:** Analytics and data visualization notebook – domain-agnostic data discovery tool for large, multi-variate, high dimensional data analysis, using patent-pending explainable AI algorithm, exclusive to Zeblok

  Provides crucial data comprehension step as starting point for AI model development – patterns, correlations and causation

- **Quantum-Safe Entropy-as-a-Service:** Truly random numbers, generated by single photon detection (SPD) technology, delivered via container for integration within existing encryption key management

- **Runtime Environment:** Finished model pipeline easily promoted to a runtime API, including inferences running at the Edge

- **Multi-Cloud from Core to Edge:** Deploy Ai-MicroCloud™ anywhere, including enterprise data centers, public clouds and Edge locations

Partner Programs

- **Frontier:** CSPs and MSPs upsell Ai-MicroCloud™ to remain competitive; Specialized hardware manufacturers use Zeblok's orchestration to enable AI workloads on their hardware

- **Ingenuity:** Algorithm originators are able to develop their software more easily on our Ai-MicroCloud™ and we facilitate commercialization by including their algorithms in our Intelligence Marketplace

- **Insight:** Data providers benefit from our accelerated search capabilities

- **Build Intelligence Services:** Broad network of AI solutions firms help integrate AI into enterprises' mission-critical process

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