PILOT DEMONSTRATORS

Health ‘Personalised medicine based on non-invasive Glucose monitoring’

AI-DAPT aims to pioneer non-invasive monitoring solutions through AI analysis of physiological signals, revolutionizing healthcare with early detection and continuous monitoring for improved patient outcomes.

Robotics & Cognitive Ergonomics ‘Human-centered automation’

Enhancing human-centered automation, it integrates real-time worker data to optimize productivity and safety through AI pipelines that predict and mitigate stress, showcasing the benefits of digitalizing human factors in industry.

Energy ‘Cross-vector Residential DR through Smart Heating’

Addressing energy inefficiency in buildings, it uses monitoring and ML techniques to optimize forecasts and enable personalized demand response, achieving energy savings and reducing peak load.

Manufacturing ‘Predictive Maintenance of Production Assets’

In manufacturing, it leverages AI for predictive maintenance, optimizing spare parts and workforce planning. With synthetic data generation and bias detection, it delivers adaptable AI models, enhancing uptime and cutting costs.

CONSORTIUM

ATHENA Research & Innovation Information Technologies
BIBA
CHARITÉ UNIVERSITÄTSMEDIZIN BERLIN
INTELLIMECH CONSORZIO PER LA MECCATRONICA
domx IOT TECHNOLOGIES
Fraunhofer FOKUS
MCS DATALABS
MADE Competence Center i4.0
OHS engineering
SETU Ollscoil Teicneolaíochta an Oirdheiscirt / South East Technological University
University of Cyprus
Suite5 We Deliver Intelligence
UNINOVA
S&D Consulting Europe www.sdconsulting-eu.com
UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH
UBITECH ubiquitous solutions
ZENIE
WITSIDE

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AI-DAPT

AI-Ops Framework for Automated, Intelligent and Reliable Data/AI Pipelines Lifecycle with Humans-in-the-Loop and Coupling of Hybrid Science-Guided and AI Models

The project has received funding from the European Union’s Horizon 2023 research and innovation program under the Grant Agreement No. 101135826

Start: 01/01/2024
Duration: 42 months
Participating organisations: 18
Number of countries: 7

Part of:

adra The AI Data Robotics Association

ABOUT US

AI-DAPT pioneers data-centric AI solutions, reshaping industries with innovation and reliability. Our focus on AI Operations (AIOps) ensures seamless automation of data pipelines, driving trustworthy AI advancements. By integrating humans into every step, we prioritize proper data handling and model optimization. Through our approach, we bridge the gap between data and AI models, empowering industries and fostering collaboration.

RESEARCH AGENDA

XAI-Driven Data Operations

Elevate data processes with Explainable AI, enhancing transparency and insight across mining, exploration, and bias detection.

Collaborative Feature Engineering

Optimize feature selection through teamwork, streamlining data and enhancing AI model efficiency.

Hybrid Science-guided Models

Combine scientific principles with AI, crafting robust models that leverage domain expertise for reliable solutions.

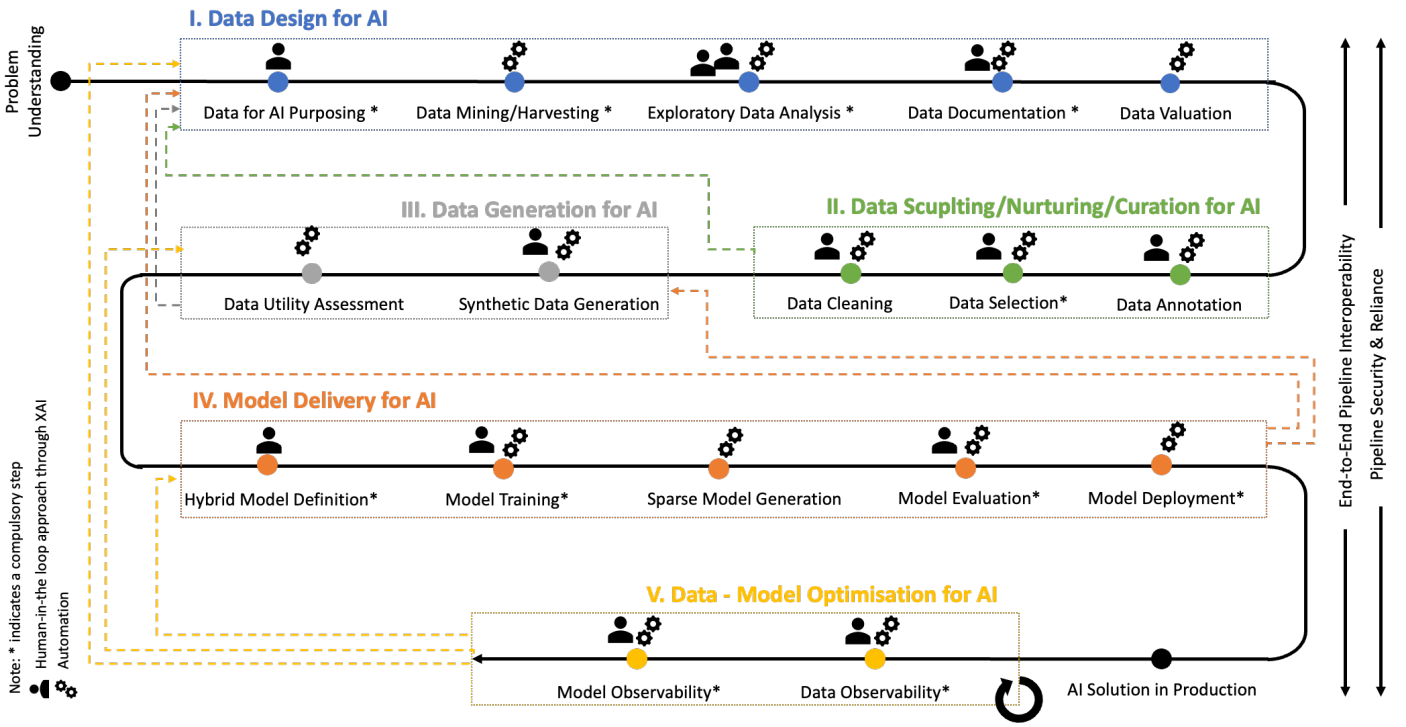
Sparse Model Generation

Efficiently represent complex data, minimizing resources while maintaining performance with sparse model techniques.

Adaptive AI for Model Training

Keep models relevant with continuous learning, ensuring effectiveness in evolving environments through adaptive AI.

THE AI-DAPT CONCEPT



AI-DAPT approaches AI with a focus on data, leveraging automation and AI techniques to construct robust, intelligent, and scalable data-AI pipelines. These pipelines are designed to continuously adapt and learn from their environment, executing efficient steps that integrate operational and business logic. They can be triggered by schedules, real-time events, or other triggers, and can run in parallel or sequence.

During Phase I, known as "**Data Design for AI**", data scientists select suitable data for the AI solution, drawing on domain knowledge. Automated processes fetch raw data from internal databases to ensure it's up-to-date. Data characteristics are analyzed and summarized collaboratively by data scientists and business users, documenting findings for standardized reports.

In Phase II, "**Data Sculpting/Nurturing/Curation for AI**", AI/ML techniques are employed to ensure data representativeness and quality. Features are annotated semantically and engineered, with relevant ones chosen for the AI model. Cleaning techniques are applied to enhance data quality.

Phase III, "**Data Generation for AI**", tackles data scarcity by creating synthetic data to supplement or replace real data. Data utility assessment evaluates the suitability of synthetic data.

In Phase IV, "**Model Delivery for AI**", data scientists oversee the AI model lifecycle, using hybrid science-guided ML approaches. Models are configured, trained, and deployed for real-world application, considering prediction uncertainty.

Phase V, "**Data-Model Optimization for AI**", focuses on continuous monitoring and improvement of the AI solution based on real-life operation circumstances. Data and model observability ensure timely adjustments.

Throughout the process, Explainable AI techniques elucidate AI models and results, filtering out low-quality or biased data. The pipeline combines manual and automated steps, ensuring efficiency and reliability in AI development and deployment.