**🧾 Service Catalog: AI & ML Solutions**

**🌐 Section Title:**

**Intelligent Solutions Powered by Artificial Intelligence**

Leverage the power of Machine Learning to automate decisions, detect anomalies, forecast trends, and uncover hidden patterns in your data.

**🧩 1. Custom Model Development**

**🔹 Overview:**

Build machine learning models tailored to your unique business needs using structured, semi-structured, or unstructured data.

**✅ Key Services:**

* Data exploration, cleansing, and feature engineering
* Model training, hyperparameter tuning, and cross-validation
* Classification, regression, clustering, and recommendation systems
* Model evaluation with confusion matrix, AUC, RMSE, etc.
* Deployment to cloud or on-prem (via API, container, or embedded script)

**🎯 Outcomes:**

* Bespoke ML models aligned with your data and goals
* Full ownership of IP and training logic
* Scalable architecture for continuous retraining

**🧩 2. Anomaly & Fraud Detection**

**🔹 Overview:**

Implement intelligent anomaly detection systems to catch deviations, fraud, and unexpected behaviors in real time.

**✅ Key Services:**

* Statistical and ML-based anomaly detection (Isolation Forest, ARIMA, Autoencoders)
* Real-time fraud detection for financial transactions or operations
* Event-driven alerting system integration
* Explainable AI (XAI) for root cause analysis

**🎯 Outcomes:**

* Early detection of issues before business impact
* Reduced false positives with smarter models
* Improved trust via interpretable results

**🧩 3. Predictive Analytics & Forecasting**

**🔹 Overview:**

Turn historical data into future-ready insights with time-series forecasting and trend prediction.

**✅ Key Services:**

* Demand forecasting, revenue prediction, churn modeling
* Use of ARIMA, Prophet, LSTM, Gradient Boosting, XGBoost
* Time-series decomposition and anomaly handling
* Forecast visualization with confidence intervals
* Business scenario modeling with what-if simulations

**🎯 Outcomes:**

* Improved business planning and inventory decisions
* Minimized guesswork with data-driven forecasts
* Dynamic dashboards showing future trends

**🧩 4. AI Integration & MLOps**

**🔹 Overview:**

Operationalize your AI pipeline to integrate seamlessly with applications, dashboards, and workflows.

**✅ Key Services:**

* Model APIs (FastAPI, Flask, Azure ML, AWS Sagemaker)
* CI/CD pipelines for ML (MLOps using MLflow, DVC, Kubeflow)
* Model versioning and lifecycle management
* Model drift monitoring and auto-retraining

**🎯 Outcomes:**

* Fast, secure deployment of models to production
* Ongoing monitoring ensures relevance and accuracy
* Scalable AI architecture ready for enterprise use

**📌 Optional Add-ons:**

* **Data Privacy in AI**: Differential privacy, secure model training
* **Pretrained Model Customization**: Fine-tune GPT, BERT, YOLO, etc.
* **Edge AI Deployment**: AI inference on IoT, mobile, or edge devices