iFusion[™]



Gold Cloud Platform Silver Application Development Silver Application Integration

Powering Digital Transformation across Industries with Innominds iFusion & Microsoft Azure

iFusion's data virtualization, heterogeneous data unification, AI, and ModelOps capabilities combined with Azure data management, cognitive, and IoT services deliver end to end data and model management that is agile, scalable, and modern. The duo helps businesses build enterprise-grade IoT-connected solutions and unlock value out of their data assets through intelligent automation and decision support.

Manufacturing

Improved efficiency, quality, and innovation with smart manufacturing solutions



Manufacturing sites often have a wide variety of machines, tools, and production systems. The amount of data generated from these IoT sources and information services is exponentially growing. Additionally, a key goal in modern manufacturing is to be able to use data from multiple sources at the edge to adapt the manufacturing process in real-time.

iFusion[™] enables manufacturers to make effective decisions and gain significant savings with its ability to accurately predict and implement use cases such as demand forecasting, asset utilization, predictive maintenance, quality management, and price prediction with parallel processing of advanced AI, ML, and analytics algorithms.

You can connect, monitor, and manage any type of industrial device with automatic device provisioning, per-device authentication, and collection of telemetry data using Azure IoT Hub. It connects the devices virtually to the cloud for data processing and enables secure bidirectional communication between IoT applications and devices including FOTA/ SOTA updates. Azure Event Hub lets you transform and store the data, enabling distributed stream processing with low latency and seamless integration.

In-built data collectors of iFusion will help you collect heterogeneous data from various sources and ingest it into Azure Data Lake, enabling you to store and further holistically analyze the data. You can then gain insights into the data in the form of dashboards using Power BI capabilities. Additionally, you can monitor the health, usage, and performance of assets with Azure Time Series Insights and drive operational efficiency at scale.



iFusion enables a microservices approach to data to atomize data journeys and achieve scalability through distributed processing. It provides an AI/ ML engine with Deep Learning environment support and an easily usable and deployable workspace with features such as bring your own algorithm, out-of-the-box pre-processing steps, versioning, and deployment. With iFusion, you get a complete ModelOps toolchain to create, author, collaborate, validate, deploy, monitor, and govern models. iFusion's built-in machine learning capabilities and extensible Azure Stream Analytics lets you run real-time analytics in the cloud. For analytical capabilities closer to where the data originates, iFusion provides Edge AI capabilities, allowing low latency and decentralized decision making. Additionally, you can optimize infrastructure management with on-demand provisioning using Azure functions.



Medical Imaging

Precise, predictive, and connected healthcare with scalable video processing services



With increasing demands from patients for enhanced quality and increased value, healthcare companies are under constant pressure to deliver better outcomes. Whether it is to advance care, enhance effectiveness, or manage risk, organizations need data-driven decision-making. However, dealing with healthcare data is difficult as it involves multiple sources ranging from electronic health records to real-time vital signs monitoring and must comply with government regulations.

iFusion with its heterogeneous data collectors enables hospitals to collect and unify data from various sources such as hospital information management systems and device-generated data sources. The Microsoft cloud for healthcare helps you achieve HIPAA/ HITRUST/GDPR compliance. From the edge to the cloud, you can monitor and manage your solution's end-to-end security with Azure Sphere and Azure Security Centre for IoT. You can manage data and train AI models on the Azure cloud and deploy them on the Edge for local inferencing with iFusion's Edge AI capabilities. Thus enabling low latency insights that are poised to create a dramatic positive difference in reducing preventable medical errors.

In telehealth and especially autonomous medical processes, safety is paramount and hence demands massive amounts of training data so that the algorithms can be perfected over time to offer meaningful insights. Moreover, thousands of media collected from various sources need to be stored, cleaned, labeled, and processed to be used as trained data.

iFusion comes to the rescue with its inbuilt accelerators for data wrangling, data cataloging, data annotation, additional training data creation, and model training in the cloud. The platform supports transfer learning, a super-effective technique to considerably reduce training time and increase performance when we have a relatively small dataset to train on. It lets you use pre-trained models that are publicly available or custom models available out-of-the-box in iFusion.



Azure IoT Hub helps you to connect with any type of medical device, collect data from these devices and ingest it to the cloud. You can then process the data and identify patterns with Azure Stream Analytics. Azure API for FHIR lets you transform and store the heterogeneous data collected from healthcare systems and medical devices to ensure interoperability. Analyzing 3D medical images can require up to 50 GB of bandwidth a day. With Microsoft's Medical Imaging Server for DICOM, you can efficiently migrate medical imaging data to the cloud. Medical imaging data includes large image and video files which can be stored in Azure blob storage. With iFusion and Microsoft Azure technologies, physicians and surgeons can gain real-time inferences in the form of patient condition evaluation and surgical guidance. These insights are obtained through running efficient AI models and video processing techniques on visual and multi-spectral data obtained from interoperative videos and diagnostic images.



Cold Chain

Superior product integrity with end-to-end real-time visibility and insights



In-transit cold chain failures lead to massive losses. The most significant risk is maintaining product integrity: quality and freshness of food products, potency and efficacy of medical products, and safety of chemicals. Even the slightest temperature, pressure, or humidity excursions result in damaged consignments and the loss of millions of dollars. Additionally, vehicle breakdown delays might lead to unsatisfied customers and spoilage of perishable goods.

iFusion predictive analytics capabilities and Azure Stream Analytics helps logistics teams predict spoilage of goods ahead of time by analyzing controllable parameters like temperature, pressure, humidity, etc. and prevent the goods from spoilage by automating alerts when a condition threshold is breached or even send geofencing alerts using iFusion Rules Engine and Azure Notifications Hub. The asset tracking APIs will help you deliver in-transit alerts and intelligent suggestions to enterprise applications.

Microsoft's Azure IoT Hub enables you to gather and ingest different types of data – vehicle telematics data and perishable goods sensor data – to the cloud and communicate any messages back to the devices along with performing SOTA/FOTA updates. Whereas, Azure Event Hub delivers you the capability to handle millions of events per second in real-time. The historical data can be stored in SQL Azure DB which acts as persistent storage. iFusion can then leverage this data and holistically analyze the end-to-end cold chain to identify the weak links where the most deviations happen by analyzing wastage trends concerning route, goods category, vehicle, driver, and various other factors. Thus enabling the operations team to take intelligent actions quickly with a unified view of data and visualizations in the form of Dashboards from Power BI.

Additionally, streamline logistics using real-time data and alerts powered by Azure Maps to optimize delivery routes, monitor performance, and respond to delays or issues as they happen. iFusion's cognitive capabilities combined with Microsoft's scalable cloud-based IoT platform ensure that decision-makers have the data they need – whenever and wherever they need it



Digital Twins

Comprehensive, scalable, and secure digital models to optimize business performance



The digital transformation journey is changing the nature of asset-intensive businesses to become agile, maximize sustainability while retaining profit, and optimize all capitalintensive assets. In that context, a digital twin – virtualized copies of physical assets and their operating behaviors – is playing a key role.

Azure Digital Twins enables you to model any environment using Open modeling language, whereas iFusion's data management services help you to explore what data exists, what data fits for purpose, and then in combining and blending the data to derive insight. You can easily manage access and identity controls to your digital twins with features like role-based access control (RBAC) and Azure Active Directory (Azure AD). Connect all your loT devices as well as existing business systems using Azure IoT Hub, Logic Apps, and REST APIs to break down silos and build dynamic business logic on Azure. iFusion's AI and model management services enable you to build an analytics framework and make a data-driven decision. You can forecast any incident that can happen in the future by performing predictive analytics using the data captured from physical systems and simulating the lifecycle. iFusion eliminates uncertainty for businesses while moving models from studio to production. It ensures that the models are reliable and trustworthy with total governance, interpretability, and control of AI.

iFusion provides intelligent insights to take relevant action based on the analysis to avoid any catastrophic incidents from happening. For example, the digital twin of a nuclear reactor can detect any upcoming problem and switch off the physical reactor. Similarly, in the case of battery manufacturing, battery explosion due to overheating can be avoided by forecasting using AI.

About iFusion.ai[™]

iFusion.ai[™] is an autonomous AI platform that accelerates the application of AI, ML, and analytics for businesses in the cognitive era. It powers full lifecycle AI management from data exploration to modeling to production, addressing key challenges of maintainability, scalability, and governance with DataOps, MLOps, ModelOps, and Edge Analytics. It enables enterprises with self-driven and sustainable AI adoption for intelligent decision-making. It equips ISVs with a plug-and-play platform that would provide the foundational components and expedite the development of AI and analytics aspects into their product.

www.innominds.com

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055 Junction Avenue, Suite 122, San Jose, CA 95131, USA

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