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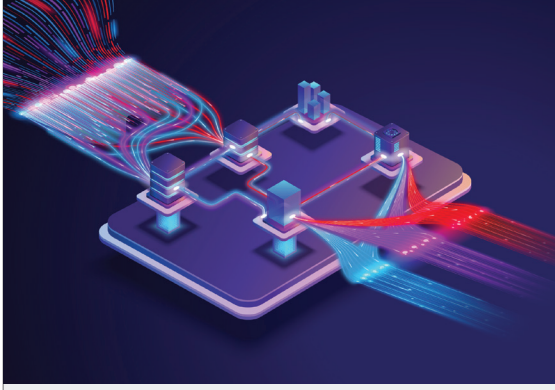

CHIMERA 4.0 AND CHIMERA FORGE

Rapidly configurable software development tool to fit any mission

Chimera 4.0 offers an open-source application framework designed to create processing systems that adhere to software architectural best practices including reusability, modularity, maintainability and testability. It is compliant with the Modular Open Systems Approach (MOSA) directive.

Chimera facilitates the design of an affordable and adaptable system.

- Rapid and scalable mission system design and modernization
- No coding required to ensure data gets to where it needs to go
- Coding is done through Chimera modules – simplified units of code that focus on the core processing tasks required by the mission
- Eliminates tedious development tasks
- Significant reduction in recurrent engineering tasks
- Intuitive data flow and manipulation
- Increased processing efficiency through dynamic resource use and management
- Scalable at a thread-, process- or processor-level to provide flexibility
- Growing library of Chimera modules available for integration

Chimera is an underlying software framework capable of linking scalable software tasks into a powerful processing solution for tracking applications and image processing. It supports swift redeployment of mission processing capability through containerization. Containerization provides many benefits:

- Simple and adaptable
- Open architecture
- Efficient
- Distributed processing support
- Hardware acceleration

SYSTEM REQUIREMENTS

- Chimera modules are coded in C++ 17
- Chimera will run on any POSIX-compliant modern operating systems

USES

- Tracking applications
- Image processing
- Command and control
- Communications
- Distributed computing
- Third-party algorithms
- AI/ML inference engine
- Containerized applications
- MOSA/OMS/FACE/DDS

CHIMERA 4.0

- System framework that breaks coding into modules for rapid development

CHIMERA FORGE

- Environment tailored to specific customer needs to run the L3Harris Chimera coding

CHIMERA 4.0 BENEFITS

- Improved inter-module communications
- An improved queue system over version 3.6.1 between modules
- Asynchronous operation of modules
- Improved settings features for modules
- Improved logging and clock operations
- Improved DevOps pipeline support
- Enhanced statistics and monitoring
- Open-source framework

SIMPLE AND ADAPTABLE

- Simple wrappers can be written to interface to any linkable libraries
- Easily adaptable
- Powerful addition to any code-compatible base

OPEN ARCHITECTURE

Chimera is built upon commercially available technologies and libraries. This allows for infinite expandability and future-proofing. No piece of the architecture is dependent upon a vendor providing updates. The architecture can be adapted to meet future and unknown mission needs.

EFFICIENT

Chimera does not copy the data between modules; it only passes a pointer to that data in memory, therefore maximizing performance by reducing copies that require processing.

HARDWARE ACCELERATION

Latency considerations are important for any image processing architecture. Chimera plugins are written to use available technologies, such as NVIDIA™ CUDA, to reduce latency. Docker™, with the NVIDIA Docker extension, allows Chimera to interface directly with the GPU. If the GPU is still not fast enough, FPGAs are also accessible by Chimera in Docker. A Chimera plugin places bytes into the FPGA memory space and another retrieves the results.

DISTRIBUTED PROCESSING SUPPORT

The Chimera image processor expands into a distributed computing environment. Modules are added to each Chimera instance to pass large imagery and associated metadata between instances. Each Chimera can be scaled to perform whatever is needed on each node.

For example, a node might only read data from a disk or physical sensor and broadcast that data to the next node. That next node may perform several image processing algorithms or a single algorithm, before handing off the output to the next instance.

All this data processing can be rapidly shared between instances, with underlying processing shared and broken up further, thereby increasing processing speed and efficiency. This capability facilitates the expedient deployment of distributed, customized computing environments for the customer's mission needs.

Chimera Forge and Chimera 4.0

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