

Martial Michel, PhD

Full-Stack Infrastructure & Solutions Architect ❖ DevSecOps / Cloud / HPC / CV / ML / NLP ❖ Executive / Researcher / Technology Evangelist ❖ US Citizen

Professional Experience

Chief Technologist

Infotrend Inc. | 2022.10 – Present

❖ **Supported Agencies:** U.S. Securities and Exchange Commission · Consumer Financial Protection Bureau

❖ **Skills:** Executive Team · Technology Leadership · Blockchain · Cloud Computing · Computer Vision · Cryptocurrency · DevOps · Docker · E-Discovery · Machine Learning · OpenStack · PyTorch · TensorFlow

Chief Scientific Officer

Data Machines | 2017.08 – 2022.10

❖ **Short list of Supported Agencies:** Defense Advanced Research Projects Agency (DARPA), US Army, National Institute of Standard and Technology (NIST), National Geospatial-Intelligence Agency (NGA).

❖ **Short list of Supported Programs:** DARPA Media Forensics (MediFor), DARPA Data-Driven Discovery of Models (D3M), DARPA Prototype Resilient Operations Testbed for Expeditionary Urban Scenarios (PROTEUS), US Army Next-Generation Biometric Collection Capability (NXGBCC), NIST Analytics Container Environment (ACE), Principal Investigator: DARPA Competency-Aware Machine Learning (CAML).

❖ **Co-chair:** Open Research Cloud · IEEE P2302 Standard for Intercloud Interoperability and Federation (SIIF) · NIST Public Working Group on Federated Cloud (PWGFC), Conceptual Model

❖ *Director of Scientific Computing* from Aug 2017 to Oct 2018

❖ **Skills:** Architecture · Biometrics · C Suite · Computer Vision · Cloud Computing · DevSecOps · Docker · GIS Applications · Infrastructure · Kubernetes · Machine Learning · OpenStack · PyTorch · TensorFlow

Federal Employee: Computer Scientist, Supervisor (2013-2017) ❖ Contractor: Systems Plus, Inc (2001-2013) ❖ Guest Researcher (1997-2001)

National Institute of Standards and Technology | 1997.04 – 2017.08

❖ NIST's Information Technology Laboratory (ITL) Information Access Division (IAD) Multimodal Information Group (MIG)

❖ **Short list of Supported projects as Federal Employee (Computer Scientist, Supervisor, 2013-2017):** MIG's Evaluation Management System's OpenStack deployment (2013-2017) · DARPA's Data-Driven Discovery of Models (D3M) · IARPA's Machine Translation for English Retrieval of Information in Any Language (MATERIAL) (2016-2017) · DARPA's Low Resource Languages for Emergent Incidents (LORELEI) (2016-2017) · Strategic and Emerging Research Initiatives (SERI) Award (2015-2017) · National Strategic Computing Initiative (NSCI) effort (2015-2017) · TRECVID Surveillance Event Detection (SED) (2013-2017) · TRECVID Multimedia Event Detection (MED) (2013-2016) · IARPA's BABEL (2013-2016) · Open Keyword Search (2013-2016) · IARPA's ALADDIN (2013-2015) · Integrated Clinical Environment (ICE) team (2013-2015) working in collaboration with the Closed Loop Healthcare SmartAmerica Team · Video Tracking Analytics for Physical Security (VTAPS) (2013-2014)

❖ **Short list of Supported projects as Systems Plus, Inc. Contractor (Senior Solutions Architect · Subject Matter Expert · Research Scientist · Project Manager · Manager, 2001-2013):** Manager of the Systems Plus team at NIST & Business Development (2007-2013) ❖ IARPA's BABEL's Scoring Server (2011-2013) · TRECVID's Surveillance Event Detection (SED) & Multimedia Event Detection (MED) Evaluations (2010-2013) · AVSS Multiple Camera Person Tracking Challenge Evaluation (2008-2010) · Classification of Events, Activities and Relationships (CLEAR) Evaluation (2007-2009) · Lead Engineer of

Worked in the distributed computing field for over 25 years, starting with designing data serialization algorithms for MPI (PhD subject), time synchronizing multimedia network streams collected using commercial-off-the-shelf hardware, developing a job scheduler, architecting data-driven research evaluation platforms, and conceiving and leading the team building an agnostic benchmarking model to allow researchers to bring their algorithms to specialized datasets.

❖ Passionate about teaching and mentoring others in the fields I have been fortunate to work in, be it Computer Vision, Natural Language Processing, Architecture and Infrastructure, Project Management, Growth mindset, ...

❖ Technology Evangelist and enthusiast (self-hosting, coding, etc.), hacker, researcher, team lead, and Open Source developer since 1998.



[martialmichel](#) - expanded experience and publications



[mmartial](#) - open-source code and studies

Auxiliary Professional Highlights

American Council for Technology - Industry Advisory Council (ACT-IAC)

Emerging Technology Community of Interest Program Chair

[actiac.org/](#) - 2023.08-Present

OpenStack

Scientific Special Interest Group co-chair for North America

[openstack.org/wiki/Scientific_SIG](#) - 2016.10-Present

CUDA TensorFlow PyTorch OpenCV

Main Developer - [Dockerfile](#)s with CPU and CUDA builds for ML/CV research based on [nvidia/cuda](#) and [Ubuntu](#) container images.

[GitHub: Infotrend-Inc/CTPO](#) - 2023 – Present

[GitHub: datamachines/cuda_tensorflow_opencv](#) - 2019 – 2022

the NIST Meeting Recognition Project (2001-2008) · Software Architect of the NIST Smart Space's NIST Smart Data Flow System (version 1) (2001-2004) · System Administrator (2001-2009) ❖ "Technology Think Tank" (T3) Award [2012]

❖ **Guest Researcher (1997-2001):** Principal Developer on Message Passing Interface (MPI) marshaling tools (PhD Subject)

❖ **Skills:** Computer Vision · Data Science · DevOps · Docker · Machine Learning · Natural Language Processing · OpenStack · Program Management · Video Analytics

Education

PhD — High-Performance Computing and Networks

Université Henri Poincaré | 1996.09 – 2021.10

❖ "Thèse en Informatique" (*Ph.D. in Computer Science*), Université Henri Poincaré, Résédas Research Group, LORIA, Nancy, France. ❖ A "Diplôme d'Etudes Approfondies" (DEA), the prerequisite for the "Thèse", was done in the same research group from 1996 to 1997 ❖ Ph.D. Dissertation on transferring dynamic data types using Message Passing Interface (MPI) ❖ Specialization in High-Performance Computing (HPC) and Networks ❖ Research performed with the NIST position.

Master's Degree — Systems and Networks

ESIAL (now Telecom Nancy). | 1994.09 – 1997.09

❖ "Diplôme d'Ingénieur en Informatique" (*Master's Degree in Computer Science*), Ecole Supérieure d'Informatique et Applications de Lorraine (ESIAL) (renamed "Telecom Nancy" in 2012), in Nancy, France (1995-1997). Emphasis on systems and networks.

Baccalauréat — Electronics

Lycée de la Communication (Metz, France) | Graduated 1992

❖ Emphasis on Electronics. Graduated with honors.

Short List of Publications/Presentations

The IEEE 2302-2021 Standard on Intercloud Interoperability and Federation

IEEE Computer Society's Cloud Continuum (VOL. 2 · NO. 1 · 2022)

<https://www.computer.org/publications/cloud-continuum/current-issue>

Standards for Cloud Federation

IEEE Standards Activities Board Webinar (2021.03)

<https://www.youtube.com/watch?v=yy2Ulu8QfGw>

Enabling GPU-Enhanced Computer Vision and Machine Learning Research Using Containers

High-Performance Computing - ISC High-Performance 2019 International Workshops, Lecture Notes in Computer Science Volume 11887 (2019.12)

https://link.springer.com/chapter/10.1007/978-3-030-34356-9_8

Open Source Private Cloud Platforms for Big Data

Big Data Analytics for Sensor-Network Collected Intelligence (2017.02)

<http://www.sciencedirect.com/science/article/pii/B9780128093931000039>

Trecvid 2017: Evaluating ad-hoc and instance video search, events detection, video captioning and hyperlinking

Proceedings of TRECVID 2017 (2017.11)

<https://www-nlpir.nist.gov/projects/tvpubs/tv17.papers/tv17overview.pdf>

A new data science research program: evaluation, metrology, standards, and community outreach

International Journal of Data Science and Analytics (2016.08)

<https://link.springer.com/article/10.1007/s41060-016-0016-z>

Creating HAVIC: Heterogeneous Audio Visual Internet Collection

Proceedings of the International Language Resources and Evaluation (LREC) 2012 (2012.05)

<http://www.lrec-conf.org/proceedings/lrec2012/summaries/885.html>

IEEE 2302-2021

Standard for Intercloud Interoperability and Federation ([vice-chair](#))

standards.ieee.org/ieee/2302/7056/ - Published 2022.03

NIST SP 500-332

The NIST Cloud Federation Reference Architecture

nist.gov/publications/nist-cloud-federation-reference-architecture-0 - Published: 2020.02

Bronze Medal Award for Superior Federal Service

"For development of novel evaluation frameworks, metrics and datasets supporting foundational research in video analytics and video search"

nist.gov/news-events/news/2015/12/national-institute-standards-and-technology-presents-2015-awards - 2015.12

Skills

- ❖ Biometrics
- ❖ Cloud Computing
- ❖ Computer Vision (CV)
- ❖ Data Science
- ❖ DevSecOps
- ❖ High-Performance Computing (HPC)
- ❖ Machine Learning (ML)
- ❖ Natural Language Processing (NLP)

Knowledge/Stacks

❖ **Cloud:** OpenStack, Docker, Ansible, Vagrant, Terraform, k8s, AWS, GCP, Azure, ...

❖ **OS/Infra:** Linux, macOS, misc SMP, MPI, GPU, Nvidia Jetson, Intel Xeon Phi, Raspberry Pi, Compiler-Compiler, ...

❖ **Coding:** Python, Go, Perl, C/C++, bash, Git, SQL/NoSQL/Graph, LaTeX, ...

❖ **Research Stack:** OpenCV, TensorFlow, PyTorch, Keras, spaCy, pandas, ...

❖ **Leadership:** NIST's New Leader Program (Class 15, 2017) · Project Management and Leadership Program (Class II, 2014)

❖ **OpenSource Dev:** [JobRunner](#) (creator, 2010-2017) · [F4DE](#) (2008-2017) · [eBayAgent](#) (2001-2007) · [keychain](#) (2002) · [NetComics](#) (1999-2006) · [Dead Link Check](#) (creator, 1999) · [Public Bookmark Generator](#) (creator, 1998-2001)

❖ **Publications/Presentations:** [linkedin.com](#) · [ResearchGate](#)

Languages

English - Professional


French - Professional

The NIST Meeting Room Pilot Corpus

Proceedings of the International Language Resources and Evaluation Conference (LREC)

2004 (2004.09)

- NIST Meeting Pilot Corpus Speech: ISBN: 1-58563-302-x
- NIST Meeting Pilot Corpus Transcripts and Metadata: ISBN: 1-58563-303-8

 <http://www.lrec-conf.org/proceedings/lrec2004/pdf/137.pdf>

Latest version initially created in Notion, exported to HTML, media-print edited in Visual Code and printed to PDF.