

Francoise (Kuan-Hua) A.

Technical Director | Clinical & Biomedical Data | Interoperability, Digital Health & Bioinformatics



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PROFILE

Technical Director specializing in AI-enabled healthcare, clinical and biomedical data, interoperability, and bioinformatics. I lead the design and delivery of digital health platforms, data pipelines, and products combining AI, clinical data, and multi-omics. My background spans software architecture, full-stack development, FHIR and medical terminologies, bioinformatics, data governance, and Agile product/project leadership. PMP®, PMI-ACP®, and ISO/IEC 27001:2022 Internal Auditor certified, I bridge clinical needs, business priorities, and technical decisions to build secure, traceable, production-ready systems.

CORE EXPERTISE

Technical Leadership / Product / Healthcare Platform Architecture

Bioinformatics & NGS: WGS, WES, RNA-seq, Pipelines

Data & Integration: PostgreSQL, MySQL, MongoDB, Neo4j

Frontend: React, Angular, TypeScript

Backend & APIs: Python, Java Spring Boot, FastAPI, Django

Data Visualization: Python, Dash, R Shiny

Data Analysis & Machine Learning

Healthcare AI / LLM: RAG, GraphRAG, Prompt Evaluation

PROFESSIONAL EXPERIENCE

09/2026 – Present
Current

Freelance Technical Director | Digital Health, Clinical & Biomedical Data, Interoperability & Bioinformatics

MedcomAsia Bio-Technology Company, Taiwan — remote from France

Technologies: FHIR, SNOMED CT, LOINC, ICD, Python (FastAPI / Django / Flask), Java Spring Boot, React, Docker, PostgreSQL, MySQL, MongoDB, Keycloak, LLM / RAG

- Continuing the technical direction of digital health and bioinformatics projects from France, focusing on technical strategy, architecture, product, and delivery without day-to-day administrative or HR responsibilities.
- Defining technical directions, architectures, roadmaps, and development priorities based on clinical, business, and product needs.
- Providing technical leadership to R&D, Data Science, MIS, and bioinformatics teams on architecture decisions, technical priorities, and complex problem solving.
- Designing and evolving platforms integrating clinical, genomic, metabolomic, laboratory, imaging, and medical-device data with a strong focus on traceability, security, and data governance.
- Interoperability and AI-ready data: FHIR-native DSDR registry, SNOMED CT / LOINC / ICD terminology mapping, and integration of HIS / LIS / PACS / device data flows.
- Industrializing AI use cases through structured pipelines, report generation, human validation, prompt testing, and controls to reduce hallucinations and token costs.
- Leading product delivery with Jira / Notion, aligning clinical and business requirements and supporting teams through deployment.

11/2023 – 08/2026

2 yrs 9 months

Head of IT Innovation | Digital Health, Data & Bioinformatics

MedcomAsia Bio-Technology Company, Taiwan

Technologies: Java (Spring Boot / Spring AI), Python (Flask / FastAPI / Django), React, TypeScript, Docker, GitLab CI/CD, PostgreSQL, MySQL, MongoDB, Neo4j, GraphQL, Keycloak, RDF / SPARQL, FHIR

- Led the IT Innovation department with management of R&D, Data Science, and MIS teams, setting priorities and coordinating technical and business stakeholders.
- Managed roadmaps, backlogs, sprints, and deliverables with Jira and Notion in an Agile environment.
- Designed a data collection and integration architecture for a precision-medicine clinic, connecting clinical systems, health-check devices, and heterogeneous data sources with traceable and secure data flows.
- Led a FHIR-native DSDR registry and participated with the team in Connectathon 2026 (tracks 2 and 3) to test FHIR-based exchanges.
- Designed a secure data pipeline transforming clinical, genomic, and multi-omics data into structured, standardized, traceable, AI-ready datasets.
- Architected WGS / WES platforms and bioinformatics pipelines, APIs, and reporting modules for clinical and research use.
- Implemented IAM with Keycloak, CI/CD practices, and security governance for healthcare-data environments.

02/2023 - 07/2023

6 months

Internship

France, LBBE (Laboratory of Biometry and Evolutionary Biology)

Technologies: HTML, CSS, JS, jQuery, Python Flask, Docker, Singularity, Unix, Snakemake

Re-architected the DGINN pipeline with Snakemake; created an API to make the pipeline accessible to biologists.

- Rebuilt DGINN pipeline with Snakemake
- Built an API with Python Flask (server) and HTML / CSS / JS / jQuery (frontend); containerized with Docker
- Edited a scientific manuscript in French

2022/09 - 2022/12

Analyzing Spotify Music Data with Machine Learning and Pattern Mining (Project)

Technology: Python

ML course project (pair programming).

2020/09 - 2022/07

2 years

End-to-End Bioinformatics Data Platform Development (Full-Stack)

GAD (Génétique des Anomalies du Développement) – University Hospital (CHU) of Dijon, France

Technologies: Python, Flask, JavaScript, HTML, CSS, jQuery, MongoDB, Unix, Apache (internal preprod / server environment), Java, qsub (HPC scheduling)

- Designed and developed a web-based bioinformatics platform for clinical and research use, supporting large-scale genome / exome sequencing analysis and visualization.
- Built an end-to-end data pipeline using Python and MongoDB for patient-derived variant processing and querying.
- Developed interactive visualization tools and dynamic UIs with JavaScript / jQuery for geneticists and clinicians.
- Enhanced Java tools to strengthen ETL preprocessing and consistency.
- Deployed within the hospital's Unix servers to ensure security and performance.
- Used qsub job scheduling on HPC clusters for batch processing and optimized resource allocation.
- Proficient with Unix command-line operations for automation, monitoring, and maintenance.
- Provided on-call support for data workflows, including maintenance, troubleshooting, and tool updates.

06/2016 - 06/2019

3 years

Administrative Secretary & Project Assistant

Formosa IT Training — Lyon, France

Technologies: HTML, PHP, CSS, JavaScript, SQL

Formosa is an IT professional training organization; supported course and project management, instructor enablement, and operations.

- Managed administration, HR, and course scheduling; supported PMs and instructors in curriculum planning.
- Coordinated communication between clients and technical teams to keep projects on track.
- Applied Agile mindset to multitasking; set up standardized documentation and task tracking.
- Built a foundation for later Product Owner cross-functional collaboration and leadership.

2012-2013

6 months

Substitute English Teacher

Cha-Chiao Elementary School, Jin-Min Branch — Sanxia, New Taipei City, Taiwan (R.O.C.)

Taught English to grades 1–6 (ages 7–12); supported library and data cataloging tasks.

08/2010 - 08/2011

1 year (full-time)

HR & Administration

Sanxia District Church Foundation — New Taipei City

Social welfare services, documentation and data processing, youth mentoring, and life-education classes on campus.

09/2006 - 06/2007

10 months (part-time)

Teaching Assistant — Biostatistics

Public Health Laboratory — China Medical University — Taichung, Taiwan (R.O.C.)

Supported the Biostatistics Center teaching activities: 1. Data querying and integration 2. Statistical analysis and SAS teaching materials 3. Literature searches 4. Hospital questionnaire surveys as research data

09/2006 - 06/2007

10 months (part-time)

Clinical Research — Practical Data Processing

Biostatistics Center — China Medical University — Taichung, Taiwan (R.O.C.)

Performed data processing and statistical analysis using SAS, SPSS, and R; supported course preparation and materials.

2005/09 - 2006/06

10 months (part-time)

Assistant to Professor — Environmental Sciences

Public Health Laboratory — China Medical University (Taichung, Taiwan)

Supported microbiology research and contributed to GIS-based analyses for environmental applications.

TECHNICAL SKILLS — DETAILS

Product Ownership & Systems Architecture

Agile / Scrum / Kanban — project and delivery management · Product Backlog / User Stories / Sprint planning and execution · Layered and modular architecture design · Stakeholder communication and cross-functional collaboration (Engineering, Bioinformatics, AI) · Business model design and operations strategy · Requirements interviews, process analysis, UX / UI wireframing

Coding Languages

Python · Java · C++

Data Analysis

Machine Learning · LLM / AI / NLP (prompt engineering, RAG / GraphRAG, evaluation) · Pattern mining · Big data: PySpark, Node.js · Statistical software: R / R Shiny · Statistical software: SAS, SPSS

Front-End Development

HTML, CSS, JavaScript · Jinja2 · jQuery, Angular · React, TypeScript

Business Intelligence (BI) & Data Integration

Talend (ETL, field mapping, scheduling) · Python ETL: pandas, FHIR API (fhir.resources), REST ingestion and transformation

Frequently Used Technical Skills

GitLab / GitHub · Conda (environment management) · Docker · Keycloak (SSO / IdP: OIDC, SAML, RBAC) · Cloud (Biosphere / Google / Amazon) / NVIDIA Parabricks · CI / CD · K8s (Kubernetes) · Unit testing

NGS Analysis

RNA-seq, ChIP-seq, resequencing, metagenomics · WGS (whole-genome) & WES (exome) · Pipelines: Snakemake, Bash (Shell)

Data Visualization

Python (matplotlib, scikit-learn, Dash, Biopython, pandas, GeoPandas, etc.) · R (Shiny)

Databases

MongoDB · MySQL, PostgreSQL · Neo4j (graph database) · RDF, SPARQL, ORM, XML, GraphQL

Back-End Development

Python / Flask · Python / Django · Java / Spring Boot

System Deployment

Linux / Unix · Windows

CERTIFICATIONS

2026	PMP® — Project Management Professional Project Management Institute (PMI) Verify credential ↗
2026	PMI-ACP® — Agile Certified Practitioner Project Management Institute (PMI) — Agile, Scrum, Kanban Verify credential ↗
2026	ISO/IEC 27001:2022 — Lead Auditor Course Certificate of course completion — Information Security Management System (ISMS)

TRAINING AND DIPLOMAS

2020 - 2023	Master Degree - Bioinformatique - University of Claude Bernard Lyon 1
2019 - 2020	Bachelors of Science, Technology, Health - Bio-Informatique, Statistique et Modelisation - University of Claude Bernard Lyon 1
2018 - 2019	Professional IT training - Company of Formosa (IT training) program : SQL, Java, Talend, HTML/CSS, JS, Responsive Design
2011	Teacher Training Program in Chinese as a Foreign Language
2006 - 2007	Teaching Assistant Service - Practical Data Processing - China Medical University, Taichung, Taiwan (R.O.C)
2007	Bachelors of Science - Department of Risk Management - College of Public Health - China Medical University, Taichung, Taiwan (R.O.C)
2002	High School Degree - Taipei Municipal Ching-Mei Girls' Senior High School, Taiwan (R.O.C)

CONFERENCES & PROJECTS

September – December 2022	Master's Project – EcoFood API Technologies: Python , Flask , Web API , PostgreSQL Public health research: developed an API to calculate the carbon footprint of Crous meals.
September – November 2022	Data Visualization of Mega-Data Technologies: Python , Web API , R Shiny , SQL Interactive visualization of air pollution data in France
February 1–4, 2022	Conference: French Annual Meeting of Genetics and Medical Genetics, Rennes "Innovative Human Genetics Database: SCNVBase for storing human genomic variant data." Authors: Kuan-Hua Artignan, Yannis Duffourd, et al. (Poster N°28146)
2020 – 2022	SCNVBase Project Technologies: MongoDB , Python Flask , HTML , CSS , JavaScript , jQuery , Apache ; quality-control server Developed a Python API using a three-tier architecture to visualize genomic variant data, implemented JWT authentication and security mechanisms, and presented project results to clinicians and biologists.
2020	Faculty Bioinformatics Project Technologies: Python , Biopython Implemented the Needleman–Wunsch and Smith–Waterman algorithms; performed annotation and NGS mapping.
2018	Website Interface Development Technologies: HTML , CSS , Bootstrap , JavaScript , MySQL , PHP Developed the website front-end interface and content management system for a foundation.

LANGUAGES

French — Very fluent **English** — Fluent **Mandarin Chinese** — Native **Japanese** — Reactive