

Francoise(Kuan-Hua) A.


IT & Bioinformatics Manager | AI and Full-Stack Systems Architecture

I am an IT and bioinformatics manager skilled in system planning and architecture. My full-stack expertise includes front-end technologies like React, Angular, and TypeScript, and back-end languages such as Java and Python, along with REST/GraphQL API design. I work with databases like PostgreSQL, MySQL, MongoDB, and Neo4j, specializing in AI platforms and data-driven systems, ensuring secure and reliable product delivery throughout development.

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Professional Experience

● IT/Bioinformatics Manager | PO/System Architect&Project Designer

Mar 2023 -
Present

MedcomAsia Bio-Technology Company, Taiwan

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

- Product Owner (PO): Defined product vision and managed backlog using Agile.
- WGSspark Architecture: Developed pipelines, APIs, and standardized workflows.
- SciTarget Platform: Created a JCR metric database and submission-strategy engine.
- FHIR ETL & Medical Data Standardization: Led ETL processes and resource modeling.
- AI Decision Support System: Integrated genomic and clinical data for enhanced predictions.
- Genomic Analysis Expertise: Merged NGS, epigenetic, and clinical data for predictive systems.
- Cross-Team Production: Coordinated IT, bioinformatics, and clinical roles; outlined data flows.
- Knowledge Graphs Development: Utilized RDF/SPARQL/Neo4j with coding standards.
- Keycloak Integration: Implemented SSO, OIDC, SAML, and RBAC; established security processes.
- Bio-DevOps: Used Snakemake and Nextflow with GitLab CI and Docker for reproducibility.
- Hybrid SaaS Model: Combined on-premises and edge solutions for data capture and processing.

● Internship (Full stack of developer and Bioinformatics analyste)

02/2023 -
07/2023

LBBE(Laboratory of Biometry and Evolutionary Biology, France)

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

- Internship focused on rebuilding the DGINN pipeline with a Snakemake framework and creating an Web API to make it easier for biologists to use.
- Rebuilt the DGINN pipeline with Snakemake
- Built an API using a Python Flask server; front end with HTML, CSS, JS, and jQuery; containerized with Docker
- Edited a research paper in French

● Using Machine Learning and Pattern Recognition to Analyze Spotify Music Data (Project)

2022/09 -
2022/12

LBBE(Laboratory of Biometry and Evolutionary Biology, France)

Technologies : Python

Machine Learning Course Project — Pair Programming Practice

Professional Experience

- 2020/09 - 2022/07 • **Full-Stack Bioinformatics Data Platform Development**
GAD (Génétique des Anomalies du Développement) – CHU University Hospital in Dijon
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 analysis and visualization of large-scale sequencing data (genome/exome).
 - Built an end-to-end data pipeline with Python and MongoDB, processing patient-derived genetic variants.
 - Created interactive visuals and dynamic interfaces with JavaScript/jQuery to help geneticists and clinicians interpret results.
 - Modified Java tools to strengthen ETL preprocessing and consistency.
 - Deployed the system on in-hospital Unix environments and servers to ensure on-premises data security and performance.
 - Used the qsub scheduler on HPC clusters for batch computing and optimized scheduling.
 - Proficient with Unix commands for automation, monitoring, and maintenance.
 - Provided on-call support for the data pipeline, including maintenance, debugging, and tool updates.
- 06/2016 - 06/2019 • **Administrative Secretary & Project Assistant**
Formosa IT Training - Lyon, France
Technologies : HTML, PHP, CSS, JavaScript, SQL
Formosa, an IT training firm, handles course and project management, instructor support, and admin operations.
 - Manage admin, HR, and scheduling; help project managers and instructors design training.
 - Align clients and tech teams to move projects forward.
 - Work with an Agile mindset; set up standardized docs and task-tracking.
 - Set the stage for later cross-department work as a Product Owner.
- 2012-2013 • **Substitute English Teacher**
Jiaojiao Elementary School, Jinmin Branch, Sanxia, New Taipei City, Taiwan
English for Primary Students (7–12). Includes support for school library and information handling
- 08/2010 - 08/2011 • **Human Resources Handling and Social Work**
Church in New Taipei City Sanxia District
Social welfare role focused on documentation and data processing, accompanying young people, and teaching life education on campus.
- 09/2006 - 06/2007 • **Teaching Assistant at the Biostatistics Center**
Public Health Laboratory, China Medical University, Taichung, Taiwan (R.O.C.)
 - Support teaching at the Biostatistics Center:
 - Data integration and analysis
 - Statistical analysis and development of SAS teaching materials
 - Science research
 - Hospital patient surveys to provide data for academic research
- 09/2006 - 06/2007 • **Clinical Research Work: Practical Data Processing**
Biostatistics Center, China Medical University, Taichung, Taiwan (R.O.C.)
Performed data processing and statistical analysis using tools such as SAS, SPSS, and R; also supported course preparation and teaching materials.
- 09/2006 - 06/2007 • **Assistant for Professor, Environmental Sciences**
Public Health Laboratory, China Medical University, Taichung, Taiwan (R.O.C.)
Assist microbiology research and participate in applying and analyzing Geographic Information Systems (GIS).

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
- 2019 - 2020 • 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

- 09/2022-12/2022 • **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.
- 09/2022-11/2022 • **Data Visualization of Mega-Data**
Technologies: Python, Web API, R Shiny, SQL
Interactive visualization of air pollution data in France
- 01/02-04/02/2022 • **Conference: French Annual Meeting of Genetics and Medical Genetics, Rennes**
“Innovative Human Genetics Database: SCNVBBase 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.

Technical Skills Overview

AI-Driven Healthcare Platform / System Architecture	★★★★★
NGS Analysis (Next Generation Sequencing)	★★★★★
AI / Large Language Models (RAG/GraphRAG, Prompt Engineering, Model Evaluation)	★★★★★
Knowledge Graphs and Data Interoperability (RDF/SPARQL, GraphQL, FHIR)	★★★★★
Data Analysis & Machine Learning	★★★★★
Front-End (React/Angular/TypeScript)	★★★★★
Back-End (Java Spring Boot/Spring AI ; Flask/FastAPI/Django)	★★★★★
Data Visualization (matplotlib / Dash / R Shiny / JS)	★★★★★

Technical Domain	Skills & Expertise
AI & Large Language Model Engineering	RAG/GraphRAG architecture design and implementation; prompt engineering; model fine-tuning and evaluation pipeline; AI model governance and version tracking; integration with full-stack web platform for decision-support systems; design of multilingual medical dialogue systems
Product Ownership & System Architecture	Agile/Scrum/Kanban project management; product backlog, user story, and sprint planning; layered/modular architecture design; cross-department collaboration and stakeholder communication (development, bioinformatics, AI); business model and operational strategy design; UX/UI wireframing and requirements analysis
Data Analysis & Machine Learning	Scikit-learn, Pandas, NumPy; feature engineering and pattern mining; statistical analysis (R/SPSS/SAS); big data analytics (PySpark/Node.js); model visualization and interpretability
Database & Knowledge Graph	PostgreSQL, MySQL, MongoDB, Neo4j (graph database); RDF, SPARQL, GraphQL; graph-based reasoning and semantic integration
FHIR & Interoperability	FHIR Resource/Terminology(ontology mapping (SNOMED/LOINC/ICD/RxNorm); FHIR API tools; FHIR-based ETL; RDF semantic transformation and standard mapping; FHIR applications
Biomedical/Bioinformatics Data Analysis (NGS & Omics Integration)	RNA-seq, ChIP-seq, WGS, WES, Metagenomics; Snakemake/Nextflow pipelines; integrative analysis of genomic and clinical data (Omics + Clinical)
Full-Stack Development	Frontend: HTML, CSS, JavaScript, Angular, React, TypeScript, Jinja2, jQuery; Backend: Python (Flask/FastAPI/Django), Java (Spring Boot/Spring AI)
DevOps / MLOps / System Deployment	Docker, GitLab CI/CD, Conda, Linux/Unix, Windows, Kubernetes (K8s), unit testing, automation monitoring; system log analysis and environment governance
Identity & Access Management (IAM)	Keycloak (SSO/OIDC/SAML/RBAC); IAM/OAuth2/Zero Trust; token-based API security and access control; multi-layer data security and compliance design
Business Intelligence & Data Integration	Talend (ETL, field mapping, scheduling); Python ETL (pandas, FHIR API, REST import and transformation); report visualization (Dash/R Shiny); ETL automation and data workflow monitoring