

Kouadio Kouao Laurent



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Education

May 28, 2022: **PhD in Geophysics**  
School of Earth Sciences,  
**Zhejiang University**,  
Hangzhou, Zhejiang Province,  
China, Grade: **A+ ( Summa Cum Laude)**

July 28, 2015 : **Master in Geophysics** « Sciences de la Terre et des Ressources Minières (STRM) », **Université Felix Houphouët Boigny (UFHB)**, Cote d'Ivoire, Grade : **A+**

Languages

French ★★★★★  
English ★★★★★

Personal Attributes

- ✓ Rigorous
- ✓ Autonomous
- ✓ Dynamic
- ✓ Organised
- ✓ Versatile

Profile

I'm a geophysicist with extensive experience in computational geophysics. My background includes advanced studies and research in leveraging artificial intelligence and machine learning for hydro-geophysics and environmental solutions. My profession involves applying mathematical theories, programming skills, and scientific algorithms to solve complex engineering issues aligning with interdisciplinary research and teaching in academic settings.

Professional Experience

|                       |  |
|-----------------------|--|
| Since June 2024       | <b>Faculty Researcher   AI in Geophysics</b><br><b>Institution:</b> <a href="#">School of Geosciences and Info-physics, Central South University</a><br><b>Location:</b> — <a href="#">Changsha, Hunan Province, 41003, China</a><br><b>Mission:</b> Deliver high-impact lectures on AI applications in geophysics, develop innovative course materials integrating AI with geophysical methods, mentor students in advanced research projects, and contribute to the advancement of AI-driven geophysical exploration techniques.   |
| July 2022 – Apr. 2024 | <b>Postdoctoral Fellow   Geophysicist – Developer of Intelligent tools</b><br><b>Institution:</b> <a href="#">School of Geosciences and Info-physics, Central South University</a><br><b>Location:</b> — <a href="#">Changsha, Hunan Province, 41003, China</a><br><b>Mission:</b> Highlight mineral resources such as water, tungsten, and tin by leveraging intelligent approaches that incorporate Machine Learning. This mission focuses on enhancing resource detection and extraction processes through the development and application of cutting-edge, data-driven technologies.   |
| June 2015 – Feb. 2018 | <b>Geophysicist   Manager of Research and New Development Department</b><br><b>Organization:</b> <a href="#">International Business and Services Plus (IBS+), Geo - Engineering</a><br><b>Location:</b> <a href="#">Abidjan, Riviera Palmeraie, 28 BP 1402 Abidjan, Cote d'Ivoire</a><br><b>Mission:</b> My role entailed overseeing prospecting, data processing, and interpretation as the head of the Research and Development of New Approaches department. I was responsible for spearheading innovative strategies and techniques in geophysical exploration to enhance our understanding and exploitation of geological resources.  |
| June 2017 – Aug. 2017 | <b>Geophysicist   Technician ( Contract )</b><br><b>Company :</b> <a href="#">Fugro Geoconsulting SAS</a><br><b>Location :</b> — <a href="#">Paris, Savoie Technolac,34 Allee du Lac d'Aiguebelette, France</a><br><b>Mission:</b> Joint Prospecting for Gao Hydroelectric Dam Project<br>In the Gao hydroelectric dam construction project located in Biankouman, Côte d'Ivoire, our mission involved a comprehensive joint prospecting initiative. This included the deployment of both 2D and 3D Electrical Resistivity Tomography (ERT) alongside seismic refraction techniques. These methodologies were integrated to ensure a thorough geological assessment and facilitate the successful development of the dam infrastructure. |
| Oct. 2014– May 2015   | <b>Geophysicist   Internship</b><br><b>Company:</b> <a href="#">BERGE (Geological and Environmental Research Office)</a><br><b>Location :</b> <a href="#">Yamoussoukro, Cote d'Ivoire, On site.</a><br><b>Mission:</b> During my internship at BERGE, I engaged in practical geophysical fieldwork, applying my theoretical knowledge to real-world geological and environmental research projects. This role provided hands-on experience in various geophysical methods and techniques crucial for my professional development in geophysics.  |

## Organizations

### *As an active member:*

- (i) *Society of Exploration Geophysics (SEG) since 2023*
- (ii) *International Association for Mathematical Geosciences (IAMG) since 2024*
- (iii) *Association for the Advancement of Artificial Intelligence (AAAI) since 2024*

## Computer Skills

- ❖ **Programming Language**
    - ✓ Python (*Expert*),
    - ✓ JavaScript/R (*Intermediate*)
    - ✓ C++ (*Beginner*)
  - ❖ **Data Science & Machine Learning**
    - ✓ TensorFlow/Keras (*Advanced*)
    - ✓ Scikit-learn (*Advanced*)
    - ✓ Pandas/Numpy (*Advanced*)
    - ✓ PyTorch (*Intermediate*)
  - ❖ **Scientific Computing**
    - ✓ Origin Lab ≥10.0 (*Advanced*)
    - ✓ ArcGIS (*Intermediate*)
    - ✓ gfortran (*Intermediate*)
  - ❖ **Geophysics & Modeling Tools**
    - ✓ Oasis Montaj ≥8.0
    - ✓ Res2DInv ≥2.0
    - ✓ WingLink ≥20.0
    - ✓ Surfer ≥12.0
  - ❖ **Development & Version Control**
    - ✓ Git/Jupyter Notebooks (*Advanced*)
    - ✓ Docker (*Beginner*)
  - ❖ **My Open-sources**
    - ✓ pyCSAMT (<https://pycsamt.readthedocs.io/>)
    - ✓ watex (<https://watex.readthedocs.io/>)
    - ✓ hwm (<https://hwm.readthedocs.io/>)
- See more in [EarthAI-tech](#)

## Recent publications

1. Kouadio K. L., Liu J., Liu W., Liu R. (2025). A mixture learning strategy for predicting aquifer permeability coefficient K; *Computers & Geosciences*, DOI: <https://doi.org/10.1016/j.cageo.2024.105819>
2. K. L. Kouadio and P. C. Bizimana (2024), "Adaptive Hammerstein- Wiener Model for Intelligent Networks," *2024 International Conference on Intelligent Computing and Next Generation Networks (ICNGN)*, Bangkok, Thailand, pp. 1-5, DOI: <https://doi.org/10.1109/ICNGN63705.2024.10871420>
3. Liu R., Jiang S., Ou J., Kouadio, K.L\*, Xiong, B. (2024). Multifaceted anomaly detection framework for leachate monitoring in landfills, *Journal of Environmental Management*, DOI: <https://doi.org/10.1016/j.jenvman.2024.122130>.
4. Kouadio, K.L., Liu, J., Liu, W., Liu, R., Boukhalfa Z., (2024). An Integrated Approach for sewage diversion: Case of Huayuan mine, Hunan Province, China. *Geophysics*. DOI: <https://doi.org/10.1190/geo2023-0332.1>
5. Kouadio, K.L., Liu, J., Liu, R., Wang, Y., Liu, W. (2024). K-Means Featurizer: A Booster for Intricate Datasets. *Earth Science Informatics*. DOI: <https://doi.org/10.1007/s12145024-01236-3>
6. Liu, J., Liu, W., Allechy, F.B., Zheng, Z., Liu, R., Kouadio, K.L\*. (2024). Machine learning-based techniques for land subsidence simulation in an urban area. *Journal of Environmental Management*, 352, 17. DOI: <https://doi.org/10.1016/j.jenvman.2024.120078>
7. Kouadio, K. L., Liu, J., Kouamelan, S. K., & Liu, R. (2023). Ensemble Learning Paradigms for Flow Rate Prediction Boosting. *Water Resources Management*, 37, 4413–4431. DOI: <https://doi.org/10.1007/s11269-023-03562-5>
8. Kouadio, K. L., Liu, J., & Liu, R. (2023). watex: machine learning research in water exploration. *SoftwareX*, 22, 101367. DOI: <https://doi.org/10.1016/j.softx.2023.101367>
9. Kouadio, K. L., Liu, R., Malory, A. O., Liu, W., & Liu, C. (2023). A novel approach for water reservoir mapping using controlled source audio-frequency magnetotelluric in Xingning area, Hunan Province, China. *Geophysical Prospecting*. DOI: <https://doi.org/10.1111/1365-2478.13385>
10. Kouadio, K.L., Liu, J., Kouamelan, S.K., Liu, R. (2023). Ensemble Learning Paradigms for Flow Rate Prediction Boosting. *Water Resources Management*, 37, 4413–4431. DOI: <https://doi.org/10.1007/s11269-023-03562-5>

For more publications, refer to my [ORCID](#)

## Latest engineering projects

- **Jan 2023 - Apr. 2024:** Leachate Leakage Detection and Management System (LLDMS)

LLDMS, is a state-of-the-art system designed to address leachate leakage from landfills, a significant environmental issue globally. LLDMS utilizes a combination of advanced machine learning algorithms and geophysical methods like Electrical Resistivity Tomography (ERT) to enhance leachate detection and management.

- **Aug. 2023 - Jan. 2024:** Advanced Hydrogeophysical Management System (AHMS)

AHMS is designed to tackle environmental issues stemming from unregulated mineral extraction, specifically targeting groundwater contamination. Utilizing audio-frequency magnetotellurics (AMT) integrated with hydrogeologic surveys, AHMS characterizes aquifers and subsurface resistivity distributions, employing a nonlinear conjugate gradient (NLCG) algorithm to generate detailed 2D models that reveal structural fracture zones and inform on groundwater flow and pollution sources.

Scan the QR code for more projects

