

FICHE A COMPLETER POUR PUBLICATION D'EMPLOIS SCIENTIFIQUES (hors BIATSS) DANS LE PORTAIL « EURAXESS JOBS »

A COMPLTER EN ANGLAIS ET A RENVOYER à : drv-euraxess@univ-amu.fr en FORMAT WORD

☐ Cochez la case si vous souhaitez **aussi** publier dans **Academic Positions**, plateforme internationale d'emploi scientifique (si visibilité internationale requise par le poste) : dans ce cas la **durée de publication** – durée entre la date de publication et la date limite de candidature - **DOIT IMPERATIVEMENT être supérieure à 3 (TROIS) MOIS.**

Autres sites ou plateformes d'emplois où votre offre a été publiée

1. 2. 3.

JOB TITLE: 18-month Postdoctoral Position in Advanced Multi-Scale Energy Forecasting using AI and Multi-Agent Systems

RESEARCHER PROFILE

- ☐ PhD / R1: First stage Researcher
☒ Postdoc / R2: PhD holders
☐ Researcher, Assistant Professor/ Senior Lecturer / R3: Established Researcher
☐ Professor, Tenure track / R4: Leading Researcher

RESEARCH FIELD(S)¹: Computer Science, Engineering

MAIN SUB RESEARCH FIELD OR DISCIPLINES¹: Machine Learning, Renewable Energy Systems, Time Series Forecasting, Multi-Agent Systems

JOB /OFFER DESCRIPTION :

The Laboratoire d'Informatique et des Systèmes (LIS - UMR 7020 CNRS/AMU) invites applications for an 18-month postdoctoral position in advanced energy forecasting. The position is funded by the CETPartnership/ANR through the OMRES project (Operation, Maintenance and digital twin solutions for hybrid Renewable Energy Sources).

RESEARCH TEAM:

The successful candidate will join the COSÉ team (Contrôle et Optimisation des Systèmes et Énergie), a dynamic research group specializing in control, optimization, and machine learning applications for energy systems. The team has strong expertise in renewable energy integration, smart grids, and advanced forecasting methodologies.

RESEARCH OBJECTIVES:

Develop cutting-edge forecasting models for:

- Wind turbine power generation (considering wake effects, weather variability)
- Photovoltaic production (cloud dynamics, irradiance patterns)
- Electricity consumption (behavioral patterns, demand response)
- Energy market prices (optional, EPEX spot markets)

¹ **Academic Positions Research fields:** Agricultural Sciences – Anthropology – Architecture and Design – Arts and Culture – Biology – Chemistry – Computer Science – Business and Economics – Education – Engineering – Geosciences – History – Law – Linguistics – Literature – Mathematics – Medicine – Philosophy – Physics – Political Science – Psychology – Social Science – Space Science – Theology

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The research emphasizes innovative AI approaches including:

- Multi-agent systems and swarm intelligence
- Large Language Models (LLM) for contextual reasoning
- Hybrid neural-physical models - Federated learning for distributed systems

KEY RESPONSIBILITIES:

- Implement state-of-the-art forecasting algorithms using weather APIs (OpenWeatherMap, ERA5) and historical SCADA data
- Develop baseline models (ARIMA, LSTM, XGBoost) for rigorous comparative analysis
- Create production-ready Python packages deployable in real-time environments
- Publish research findings in top-tier conferences (NeurIPS, ICML) and journals (IEEE Trans., Applied Energy)
- Collaborate with industrial partners including energy operators and grid managers
- Contribute to project deliverables and participate in consortium meetings

RESOURCES & ENVIRONMENT:

- Real-world datasets from operational wind farms and PV installations - Collaboration within European research network (OMRES consortium: Cyprus, Denmark, France)
- Access to high-performance computing infrastructure
- Opportunity to co-supervise Master's students

This position offers an excellent opportunity to work at the intersection of AI and renewable energy, contributing to the clean energy transition while developing expertise highly valued in both academia and industry.

TYPE OF CONTRACT: ☐ PERMANENT ☒ TEMPORARY ☐ TO BE DEFINED

JOB STATUS: ☐ FULL TIME ☐ PART TIME ☐ NEGOTIABLE

HOURS PER WEEK _____

APPLICATION DEADLINE (If not applicable, report the envisaged starting date): (Day/Month/YYYY) & TIME (00:00)

ENVISAGED STARTING DATE: (01/01/2026)

ENVISAGED DURATION: 18 months

IS THE JOB FUNDED THROUGH AN EU RESEARCH FRAMEWORK PROGRAMME? ☒ YES ☐ NO

If yes, please specify: Clean Energy Transition Partnership

HOW TO APPLY:

Send application to: seifeddine.ben-elghali@lis-lab.fr

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- Subject line: "PostDoc-Forecasting-[YourName]"
- Single PDF attachment
- Confirmation email within 48h

WORK LOCATION(S):

LIS UMR 7020 CNRS / AMU / UTLN

Aix Marseille Université – Campus de Saint Jérôme – Bat. Polytech

52 Av. Escadrille Normandie Niemen

13397 Marseille Cedex 20

Tel : +33 (0)4 12 23 12 52 / 51

secretariat@lis-lab.fr

WHAT WE OFFER: (Benefits, salary, professional opportunities, etc.)

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Additional information: The Euraxess Center of Aix-Marseille Université informs foreign visiting professors, researchers, postdoc and PhD candidates about the administrative steps to be undertaken prior to arrival at AMU and the various practical formalities to be completed once in France: visas and entry requirements, insurance, help finding accommodation, support in opening a bank account, etc. More information on [AMU EURAXESS Portal](#)

QUALIFICATIONS, REQUIRED RESEARCH FIELDS, REQUIRED EDUCATION LEVEL, PROFESSIONAL SKILLS, OTHER RESEARCH REQUIREMENTS

Education & Experience

- **PhD in:** Computer Science, Applied Mathematics, Electrical Engineering, Data Science, or related field
- **Experience:** 0-3 years post-PhD (fresh graduates welcome)
- **Publication record:** Minimum 2 papers in recognized venues (IEEE, Elsevier, Springer)

Core Technical Skills - MANDATORY

- **Classical Methods Baseline:** ARIMA, Prophet, XGBoost, LSTM, GRU
- **Python Programming:** PyTorch/TensorFlow, Pandas, Scikit-learn
- **Data Handling:** APIs (OpenWeatherMap, ENTSO-E), time series databases
- **Statistical Analysis:** Hypothesis testing, cross-validation, error metrics

Innovative Methods - AT LEAST 2 REQUIRED

Domain 1: Wind Turbine Forecasting

- Multi-agent systems for wake effect modeling

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- LLM integration for extreme weather events
- Hybrid neural-physical models

Domain 2: PV Forecasting

- Swarm intelligence for cloud variability
- Federated learning for distributed installations
- Zero-shot learning (TimeGPT/Chronos)

Domain 3: Load Forecasting

- LLM reasoning for social behavior understanding
- Multi-agent neighborhood interactions
- AutoGPT for adaptive learning

Domain 4: Price Forecasting (Optional)

- Market mechanism understanding
- Reinforcement learning for trading strategies

Preferred Additional Skills

- Experience with real-world energy data
- Knowledge of French/European energy markets
- Industrial collaboration experience

Soft skills:

- **Autonomy:** Ability to manage research project independently
- **Teamwork:** Collaborate with research team
- **Communication:** Present complex ideas simply to diverse audiences
- **Analytical thinking:** Problem decomposition and solution design
- **Adaptability:** Switch between theoretical and applied work

REQUESTED DOCUMENTS OF APPLICATION

Application Documents (Single PDF, max 10MB)

- CV (2 pages max) including:
 - GitHub/GitLab profile link
 - Google Scholar/ORCID
 - List of relevant projects
- Cover Letter (1 page) addressing:
 - Which forecasting domains interest you (wind/PV/load/price)
 - Which innovative methods you master
 - Your research vision
- Research Portfolio:
 - Demo notebook showing one forecasting implementation

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Performance comparison vs baseline methods (RMSE, MAE, MAPE)

Links to 2 relevant repositories

- Scientific Production:
2 best publications (PDF)
Brief summary of contributions (200 words each)
- References:
2 academic references with contact information

DRV

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