**Identificador:** 9a3e2e8d-ba52-4a69-a3c8-cd716e1bc679

**Calendário:**

| | | |
|---|---|---|
| Espera do edital no Eracarreers | Publicação edital<br>Email para FCT<br>PAD<br>Requerimento ISEP | 15 de Outubro |
| Concurso aberto | Divulgação<br>- ISEP<br>- outros | 30 de Outubro a 12 de Novembro |
| Resultados | Decisão e Atas<br>Email para candidatos | 21 de Novembro |
| Contrato | Documentação ISEP<br>Email para FCT com info candidatos selecionados<br>- CV<br>- FCTSIG | 15 de Dezembro |
| | | |

**English Version**

Graduate Scholarship

**Resumo do anúncio:**
Project MAN-REM - Multi-agent Negotiation and Risk Management in Electricity Markets (PTDC/EEA-EEL/122988/2010), (FCOMP-01-0124-FEDER-021489) is recruiting 3 young researchers graduated in Computer Science/Informatics or similar, with experience in computer applications for Engineering. This call concerns research activity in the area of intelligent short term management of distributed energy resources in a multi-player competitive environment. This project is funded by Portuguese funds through FCT/MEC (PIDDAC) and co-funded by “Fundo Europeu de Desenvolvimento Regional” (FEDER) through COMPETE – “Programa Operacional Factores de Competitividade” (POFC).

**Texto do anúncio**

**Referência:** MAN-REM_2014-02

**Área científica genérica:** Computer Science

**Área científica específica:** Informatics

Project MAN-REM - Multi-agent Negotiation and Risk Management in Electricity Markets (PTDC/EEA-EEL/122988/2010), (FCOMP-01-0124-FEDER-021489) is recruiting 3 young researchers graduated in Computer Science/Informatics or similar, with experience in computer applications for Engineering. This call concerns research activity in the area of intelligent short term management of distributed energy resources in a multi-player competitive environment. This project is funded by Portuguese funds through FCT/MEC (PIDDAC) and co-funded by “Fundo Europeu de Desenvolvimento Regional” (FEDER) through COMPETE – “Programa Operacional Factores de Competitividade” (POFC).

The following conditions are applied to this recruitment process:

**1. Duration of the Grant:** from December 15th 2014 until March 14th 2015 (03 months duration, eventually to be renewed according to the project execution and respective budget).

**2. Activities and workplan:** Electricity markets (EMs) are systems for effecting the purchase and sale of electricity using supply and demand to set energy prices. Two key objectives of EMs are ensuring a secure and efficient operation and decreasing the cost of electricity utilization. To achieve these goals, three major models have been considered: pools, bilateral contracts, and hybrid models. Ideally, opening up the electrical power industry to competition would be an important tool to improve efficiency and benefit energy customers. Competitive forces would drive companies to innovate and operate in more efficient and economic ways. Innovation would lead to lower prices and better uses of energy resources. However, the analysis of important European electricity markets (e. g., the Iberian market involving Portugal and Spain) yields the main observation that they are still far from liberalized. Today there is still a lack of both theoretical and practical understanding and important challenges are still waiting to be addressed more thoroughly. Chief among these are the additional complexities to coordinate technical and economic issues, and the technical difficulties to understand EMs internal dynamics. Stated simply, tariffs do not reflect the pressure of competition. EM simulators can give important contributions to this problem and a number of prominent tools have been proposed.
However, most energy management tools present limitations concerning the application field, i.e., they are tailored to specific market models and/or particular market operations.
Multi-agent systems (MAS) represent a relatively new and rapidly expanding area of research and development. MAS can deal with complex dynamic interactions and support both Artificial Intelligence (AI) techniques and numerical algorithms. In this way, a multi-agent approach in which software agents are capable of flexible autonomous action in order to meet their design objectives is an ideal fit to the naturally distributed domain of a deregulated energy market. Accordingly, this project addresses the challenge of using software agents to help manage the complexity of EMs.
Specifically, the overall goal of this project is to develop an EM simulator enabling market participants to:
(i) Negotiate the terms of forward bilateral contracts, consider dynamic pricing tariffs (efficient management of DR), reach (near) Pareto-optimal agreements, and unilaterally de-commit from contracts by paying de-commitment penalties;
(ii) Ally into beneficial coalitions - notably coalitions involving end-use customers - to achieve more powerful negotiation positions, and thus negotiate better tariffs;
(iii) Manage a portfolio of customers, taking into account trade-offs between the risk and return of bilateral contracts – notably contracts involving traders and customers.
Additionally, this project aims at integrating the EM simulator into the MASCEM system. The main expected result will be an improved energy management software tool able to simulate EMs in a complete and realistic way, thus overcoming most technical limitations of existing EM simulators.
Finally, this project addresses the application of the energy management tool to the Iberian market. The consideration of a real problem will provide additional challenges, making the tool more powerful towards ensuring the full benefits of deregulation.

The candidate to be selected will participate in the following project tasks:
T5 – Energy management software tool
T6 – Iberian market (MIBEL): real problem simulation

The selected candidates work includes:
- Upgrade of previously developed models, methodologies and applications;
- Software conception and development;
- Preparation of case studies and result analysis;
- Technical reports and scientific papers preparation and writing.

This work includes the design of the foreseen methodologies, their implementation, and test.

**3. Supervision:** The candidates to be selected will be scientifically supervised by Professor Zita Vale.

**4. Academic Degree:** Graduation in Computer Science / Informatics
Minimum profile required: Knowledge and experience in artificial intelligence, modeling, simulation, multi-agent systems, and some experience in computer applications for Engineering.

Preferred profile: Previous work experience in research activities in the area of power systems, and multi-agent systems. Good programming skills and experience in the development of artificial intelligence based computer applications. Experience in scientific research activities and authorship of one English written published paper. Writing and speaking proficiency in English.

**5. Remuneration:** As defined by FCT (€ 745.00/month), according to the table of stipends of the country (available in http://www.fct.pt/apoios/bolsas/valores.phtml.en), paid by bank transfer.

**6. Workplace:** The workplace is at GECAD – Knowledge Engineering and Decision Support Research Center in the following address:

GECAD (Knowledge Engineering and Decision Support Research Center)
ISEP/IPP
Rua Dr. António Bernardino de Almeida, 431
4200-072 Porto
Portugal

**7. Legislation and regulations:** "Estatuto do Bolseiro de Investigação Científica", approved by Law no. 40/2004, of 18 August, modified and e republished by Decree-law no. 202/2012, of 27 August and modified by Decree-law no. 233/2012, of October and by Law no. 12/2013, of 29 January; Regulation no. 405/2010, May.6.2010 (published in "Diário da República" no. 88, II Serie, 06.May.2010); "Despacho IPP-P-002-2013 - Regulamento de Bolsas de Projetos"; "Regulamento de Bolsas de Investigação da Fundação para a Ciência e a Tecnologia, I.P. – 2012.

**8. Candidate selection methodology:** Only candidates that have presented the complete set of application documents and showing evidence of having the required minimum profile required will be admitted. The selection method will take into account the following components: BSc (50%), curriculum vitae evaluation (50%). To clarify the candidates' motivation and profile, according to the fellowship requirements, an interview may be undertaken; it will be conducted in English. In this case, the following components will be taken into consideration: BSc graduation classification (25%), curriculum vitae evaluation (50%) and interview (25%).

**9. Evaluation panel:** Prof. Zita Maria Almeida do Vale (panel coordinator), Prof. Maria Goreti Carvalho Marreiros and Prof. Isabel Cecília Correia Silva Praça Gomes Pereira**.** Members of the substitute panel: Prof. Sérgio Ramos and Prof. Carlos Fernando da Silva Ramos.

**10. Results publication and notification:** The candidates will be individually notified by email message on the final evaluation results.

**11. Application Documents:** Curriculum vitae; graduation diploma; document with courses marks; copy of any previously published works that are relevant for the application evaluation. An application letter with the fellowship reference (ref. **MAN-REM_2014-02**) should be included, indicating clearly the motivation of the application and the full contact information (as minimum: email address, mobile phone number, postal address) of the candidate. All the documents prepared by the candidate for the

application should be written in English. Documents should be sent to zav@isep.ipp.pt. Additionally, they should also be sent to the following address:

GECAD (Knowledge Engineering and Decision-Support Research Center)
ISEP/IPP
Rua Dr. António Bernardino de Almeida, 431
4200-072 Porto
Portugal

**12. Application period:** from June October 30th until November 12th 2014

**13. Additional information** can be obtained by phone +351-22-8340511 or by email zav@isep.ipp.pt