

## 2 Research Fellowships

### ESHOP – Effective Solutions for Hard Optimization Problems

#### Reference ESHOP.2012

Project ESHOP – Effective Solutions for Hard Optimization Problems (PTDC/EGE-GES/104482/2008) is recruiting 2 young researchers, with a Bachelor (Licenciatura) degree in Informatics Engineering or similar, willing to work in the area of Metaheuristics, for a Research Grant for BSc owners (Licenciados). This call concerns research activity that intends to contribute with state-of-the-art algorithms for the solution of complex combinatorial optimization problems proven to be relevant in practical applications. This project is funded by Portuguese funds through FCT/MCTES (PIDDAC) and co-funded by “Fundo Europeu de Desenvolvimento Regional” (FEDER) through COMPETE – “Programa Operacional Factores de Competitividade” (POFC).

#### 1. SCIENTIFIC AREA

Computer Science / Informatics.

#### 2. ACADEMIC DEGREE

Bachelor (Licenciatura) degree in Informatics Engineering or similar.

#### 3. DURATION AND TYPE OF CONTRACT

From 1 July 2012 until 30 April 2013.

#### 4. JOB SUMMARY / WORKPLAN

The ESHOP project aims to contribute to the effective solution of complex optimization problems by designing, implementing and testing new metaheuristic algorithms capable of efficiently handling several classic combinatorial optimization problems with recognized complexity and fundamental in a wide range of applications. In this vein, the research will focus on applications of a new metaheuristic called RAMP (Relaxation Adaptive Memory Programming).

The candidate to be selected will undertake the following tasks:

- Identify prominent problems for a RAMP application;
- Construct (or revise) the RAMP model for each problem selected;
- Design the RAMP algorithms;
- Implementation, testing and tuning;
- Computational results, evaluation and conclusions;
- Technical reports and scientific papers preparation and writing.

## **5. LEGISLATION AND REGULATIONS**

Law no. 40/2004 (August.18.2004 – “Estatuto do Bolseiro de Investigação Científica”); Regulation no. 405/2010, May.6.2010 (published in “Diário da República” no. 88, II Serie, 06.May.2010) – “Regulamento de Bolsas de Formação Avançada do ISEP”; “Regulamento da Formação Avançada e Qualificação de Recursos Humanos 2010” (Published by FCT).

## **6. SCIENTIFIC SUPERVISION AND WORKPLACE**

The candidate to be selected will be scientifically supervised by Professor Dorabela Gamboa and will work at CIICESI (Center for Research and Innovation in Business Sciences and Information Systems), at the following address:

CIICESI  
Escola Superior de Tecnologia e Gestão  
Rua do Curral, Casa do Curral, Apt. 205  
4610-156 Felgueiras  
Portugal

## **7. 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.pt>).

## **8. SELECTION METHODS AND SELECTION PANEL**

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: graduation classification (50%) and the curriculum vitae evaluation (50%). In case of doubts, an interview can be undertaken; in this case it will be conducted in English.

The Selection Panel will be chaired by Professor Dorabela Regina Chiote Ferreira Gamboa and will include Professor Luís da Costa Lima and Professor Ricardo Jorge da Silva Santos. Substitute panel members: Professor Ricardo André Fernandes Costa and Professor Carla Sofia Gonçalves Pereira.

## **9. ANNOUNCEMENT DIFFUSION AND NOTIFICATION MEANS**

The announcement of the Research Fellowship will be published at ERACareers’ website and ESTGF’s website. Final evaluation results, namely the candidate list, ordered by candidate evaluation, will be made public, in printed form, in CIICESI. The candidates will be individually notified by email message.

## 10. APPLICATION

Minimum profile required: Solid background on computer science. Writing and speaking proficiency in English.

Preferred profile: Previous work experience in research activities in the areas of metaheuristics. Good skills concerning the use of relevant software applications (e.g. optimization packages), programming skills and experience in computer applications development.

## 11. APPLICATION DOCUMENTS AND PERIOD

The application period will take place from 15 to 28 of June 2012.

The application documents are the following: - 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 (**ESHOP.2012**) 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. Documents should be sent to Professor Dorabela Gamboa ([dgamboa@estgf.ipp.pt](mailto:dgamboa@estgf.ipp.pt)). Additionally, they should also be sent to the following address:

Dorabela Gamboa (CIICESI)  
Escola Superior de Tecnologia e Gestão  
Rua do Curral, Casa do Curral, Apt. 205  
4610-156 Felgueiras  
Portugal