



**CERTH-ITI idea/ topic for a thesis**

Viewshed analysis supporting ecosystem recreational services |  
open source programming for ecologists and protected areas managers

A. Earth  
observation data  
processing and  
analysis

**Related project:**

ECOPOTENTIAL  
(<http://www.iti.gr/iti/projects/ECOPOTENTIAL.html>)

Topography influences people's experience of naturalness making features invisible from certain angles and location. In order to assess the areas, from which certain features are visible, viewshed analysis is usually performed. Viewshed analysis uses the elevation value of each cell of the Digital Surface Model (DSM) or Digital Terrain Model (DTM) to determine visibility to or from a particular cell. The aim of the study is the implementation of the viewshed algorithm in an open source code suitable for parallel computing. This will allow the execution of the algorithm in a computationally affordable way for large areas. There exists possibility for publication in a Journal/Conference, if the work reaches a mature level. Further options may be discussed.

Desired Qualifications: Good knowledge of programming (python preferred), Skills in computer vision.

**CERTH-ITI idea/ topic for a thesis**

Species distribution models |  
open source programming and interface for ecologists and protected areas managers

B. Earth  
observation data  
assimilation and  
processing

**Related project:**

ECOPOTENTIAL  
(<http://www.iti.gr/iti/projects/ECOPOTENTIAL.html>)

Species distribution models examine the relationship between geographical occurrences of species and corresponding satellite mapped environmental variable. Their use has applications in regional biodiversity assessments and wildlife management. The aim of the study is the implementation of existing models (GLM, GAM, RF, BRT, NLDA, MaxEnt, etc. @ SDM-r / <http://www.maraujolab.com/sdmr/> | <http://onlinelibrary.wiley.com/doi/10.1111/ecog.01881/epdf>) in an open source programming language and their execution via a user friendly graphical user interface. This includes communication with Protected Area Managers and active participation in the ECOPOTENTIAL developing modules. There exists possibility for publication in a Journal, if the work reaches a mature level. Further options may be discussed.

Desired Qualifications: Good knowledge of programming (R preferred), Skills in statistics

**INFORMATION:**

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