

Karoly Livius Bakos

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Personal Informations

Date and place of born: 10. September 1980, Budapest, Hungary

Nationality: Hungarian

Gender: Male

I am a motivated environmental engineer with good problem solving skills and creativity. I studied in Hungary, in the United Kingdom and Italy. Currently I am a researcher and my research is focused on Natural Resource Management, Environmental management and conservation and Remote Sensing and GIS. I am motivated to work efficiently and I try to accomplish my tasks on high standards. I am usually a happy person with curiosity about everything around me. I like outdoor activities. I have strong interest also in arts specifically in visual arts such as photography industrial design.

Education

PhD in Electronics 2008 -
University of Pavia, Department of Electronics
Italy

Research area:

Development of advanced data processing chains for hyperspectral data interpretation using learning algorithms, hyperdimensional statistics and decision fusion of multiple classifiers.

PhD in Geography and Remote Sensing 2010 -
University of Warsaw, Department of Geography and Regional Studies
Poland

Research area:

Advanced Remote Sensing and GIS for Natural Resource Management and Environmental Monitoring

Natural Resource Management 2005 - 2006
Cranfield University at Silsoe
United Kingdom

Thesis:

Hybrid Decision Tree Classification of Remotely Sensed data to predict Land Cover input data for diffuse pollutant modelling in GIS.

MEng in Environmental Management and Agricultural engineering 2002 -2007
Szent Istvan University Godollo Hungary
Faculty of Landscape Ecology and Environmental Conservation

Thesis: Environmental Assessment Program of Hungary. – Methodology for GIS applications in environmental assessment processes

Professional Degree of applied Photography 1999- 2002
School of Photography at Prater utca Hungary

High School Final Degree 1995-1999.
Szerb Antal Gimnazium
Budapest Hungary

Membership of organisations

IEEE
IEEE Geoscience and Remotes Sensing Society (GRSS)
IEEE Computer Society (CS)

Computer Proficiency

- Basic Office packages (MS Office, OpenOffice)
- GIS and satellite imagery processing Software (ArcView, ArcGIS, ArcSDE, ArcIMS, ArcGIS Server, GRASS, QGIS, ERDAS Imagine, ENVI, OSSIM)
- Programming skills (C++, C#, IDL, Matlab)
- Database management and administration (MySQL, MS SQL server, Posgresql)
- Ability to Manage Peripherals Relative to PC Operating Systems and Networks (Linux, Windows)
- Ability to use different cartographic peripherals for computers (Digitising table, Plotter)
- Linux system usage and management (Ubuntu, SuSE, Debian)

Awards / Honors

Marie Curie Early Stage Researcher position

Founded research possibility at University of Pavia and Warsaw
University of Pavia, University of Warsaw 2008

Full research grant for 3 years

International Student Scholarship

MSc in Natural Resource Management
Cranfield University, Silsoe, United Kingdom 2005

Maximum monetary amount awarded

International Student Scholarship

MSc in Rural Development
Dronten University, Netherlands 2005

Maximum monetary amount awarded

Scientific conference for Students

Natural Resource Management Section
University of Szent Istvan, Godollo 2006

III. Prize

National Scientific conference for Students

Physics, Mathematics and Earth sciences Section
University of Szeged, Szeged 2007

II. prize

Linguistic Abilities

Native Language: Hungarian
Fluent in English
Beginning Level in Italian

Hobbies / Interests

Landscape Study, Geography, Cartography, Environmental Management, and Restoration; Biology; General Ecology; Language Acquisition; Technology in environmental Sciences; Graphic Design; International Travel and Work; Art; Photography Industrial design and ; Reading

Related Professional Experience and Projects

Remote Sensing

HYPER-I-NET project.

February 2008 - present: Researcher

Tasks: Working as a researcher within the HYPER-I-NET project at the University of Pavia and at the University of Warsaw. The main objective of the project is to extend the possibilities of the application of imaging spectrometers in a wide range of research area. My role in the project is to identify and design and to develop hyperspectral data processing chain that is suitable for general mapping purposes for vegetation monitoring. Afterward the assessment of the derived maps' performance is also aimed to be tested in ecological modeling and environmental planning and decision support.

GIS

ESRI Hungary Ltd.

November 2006 – February 2008: Software Developer

Tasks: Working as GIS technical consultant to help customers in designing process of Geographical Information Systems. Designing data models and derive solutions for data storage and maintenance. Giving Lectures from ArcGIS softwares (Introduction to ArcGIS I – II, Using Spatial analyst and 3d Analyst) and holding presentations for prospective customers about ESRI products.

Developing and delivering solutions for GIS applications mainly with ArcGIS Server, ArcIMS and ArcSDE. Installing the complete system and carry out configuration and customisation.

Build custom GIS solutions using the Microsoft .NET IDE (.Net, C#) and the EDN ArcGIS Engine for desktop and web based GIS applications.

Creating custom ArcIMS solutions using the Macromedia Flash IDE for dynamic mapping and visualisation processes.

Projects:

Hungarian Post : ArcGIS Server solution for web based planning application.

City Council of XVI. district of Budapest : ArcIMS and SDE application for the Local Government.

City Council of Szeged : ArcIMS mapping application and SDE data storage for Utility management.

AqvBTM Ltd. : Archeological application for data management and storage and SDE custom application.

EUCENTER Italy

August 2008 – Decembre 2008: Software Developer

Tasks: Working as a developer to participate in a project in order to build a geographic information system for the local government of Calabria Region of Italy. The main project goal was to develop a GIS system that is able to handle of all the geographic data of Calabria and can be used during planning and implementation of different structures within the region.

Projects:

Hungarian Post : ArcGIS Server solution for web based planning application.
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Ecology

Legambiente international organization Italy

2004: Member of Legambiente team in Sicily, where Coastal ecological investigation was carried out.

Project: **Restoration, Sicily, Italy** – An extensive study on the revegetation and restoration of the Coastal area, with primary goals of restoring estuarial and wetland habitats, while gaining recreational areas and preserving the historic uses of the land. Biodiversity estimation also was carried out.

Landscape Ecological assessment

XVI. District Council Budapest

2003: Ecological survey of the Lake Naplas nationally designated area

Project: **Conservation, Budapest Hungary** – An ecological and Landscape ecological analysis of the area was carried out, in order to determine the present and possible future impacts on the local habitats by human influence. Main goal of the project was to determine key elements in the Landscape, which are likely to affect on ecosystems, therefore need to be replaced, reconstructed. Management problems of the area were also included.

Solway Conservation area United Kingdom

2007: Ecological survey and Environmental Management program development for the Natural England NGO

Project: **Conservation, Solway, United Kingdom** – An ecological and Landscape ecological assessment of the solway conservation area in the United Kingdom. The project was carried out for the Natural England NGO with the purpose of assessing the present impacts on the environment and make suggestions for future environmental planning. I was responsible to coordinate a group of 10 people and our main task was to design and carry out field survey for land cover mapping based on aerial photography interpretation and carry out the mapping of vegetation of the approximately 5000 square kilometer area.

Publications

- (1) Hybrid Decision Tree Classification of Remotely Sensed data to predict Land Cover input data for diffuse pollutant modeling in GIS. (MSc Thesis, Cranfield University, 2006)
- (2) Decision Tree classification of Satellite Data. (OTDT Conference, Gödöll , 2005)
- (3) Improved classification of Remotely Sensed data. (National OTDT Conference, Szeged University, 2006)
- (4) GIS applications for Natural Resource Management (Conference at the Hungarian Scientific Academy,2007)
- (5) Server Based GIS and web mapping solutions. (Conference at the Hungarian Scientific Academy,2007)
- (6) Potential effects of land use change around the inner lake in Tihany, Hungary –Examination of geology, pedology and plant cover / land use interrelations (Alps-Adria Conference, 2008).
- (7) K.Bakos “Hyperspectral data interpretation and image processing chain development perspectives for vegetation studies” Hungarian Journal of Landscape ecology, 2008
- (8) K.Bakos, P. Gamba “Application of hyperspectral data in vegetation studies”, Hungarian Journal of Landscape ecology, 2008
- (9) K. Bakos, P. Gamba “Potential of hyperspectral remote sensing for vegetation mapping of high mountain ecosystems”. EarSel 6th IS workshop, Tel Aviv Israel, March 2009
- (10) K.Bakos, P.Gamba “A data interpretation chain for hyperspectral remote sensing data aimed at basic vegetation mapping applications”, IEEE GRSS IGARSS 2009 conference, Cape Town, South Africa, July 2009
- (11)P. Gamba, F. Dell’Acqua, K. Bakos, G. Lisini, “Information Extraction from Hyperspectral Data in Urban Areas using Contextual Information and Classifier Fusion”, Proc. of the ESA Hyperspectral Workshop, Frascati (Italy), March 2010, unformatted CD-ROM.
- (12)K. Bakos, P. Gamba, B. Zagajewsky, “Combining classifiers for robust hyperspectral mapping using hierarchical trees and class memberships”, Proc. of IGARSS’10, Honolulu, Hawaii, July 2010.
- (13)K. Bakos and P. Gamba, “Efficient Combination of Multiple Hyperspectral Data Processing Chains using Binary Decision Trees”, Proc. of WHISPERS 2010, Reykjavik, Iceland, June 2010.
- (14)K.L. Bakos P. Gamba. “Hierarchical Hybrid Decision Tree Fusion of Multiple Hyperspectral Data Processing Chains”, IEEE Trans. Geosci. Remote Sens., in press.
- (15)P. Gamba, G. Lisini, G. Trianni, K. Bakos ” Material and Object Mapping from Multispectral and Hyperspectral Data in Urban Areas”, First International Conference on Sustainable Urbanization (ICSU 2010) (proceeding
- (16)S. Prasad (editor), K.L. Bakos, P.R. Marpu, P. Gamba “Optical Remote Sensing - Advances in Signal Processing and Exploitation Techniques”, book chapter 9 “Decision fusion of multiple classifiers for vegetation mapping and monitoring applications by means of hyperspectral data”, Springer (in press)

Academic references

Paolo Gamba Prof.

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Course Director - MSc Telecommunication
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Course Director - MSc Geographical
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