

# EUGENIA G. GIANNOPOULOU, PhD

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INSTITUTE OF COMPUTATIONAL BIOMEDICINE  
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## RESEARCH INTERESTS

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- Computational Genomics. Proteomics Visualization (2D-GE, mass spectrometry, LC-MS). Bioinformatics Ontologies. Information Visualization. Data Mining.

## EDUCATION

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- **PhD in Computer Science, Bioinformatics** Sept. 2005 – Jul. 2009  
**University of Peloponnese**  
Department of Computer Science and Technology, Tripolis, Greece  
Thesis: *Integration and Visualization of proteomics data*  
Advisors: Prof. George Lepouras (University of Peloponnese)  
Prof. Elias Manolakos (University of Athens)
- **BSc in Computer Science** Sept. 2001 – Jun. 2005  
**Athens University of Economics and Business**  
Department of Computer Science, Athens, Greece  
**GPA: 7.76/10** (magna cum laude)  
Thesis: *Data mining techniques for antibiotic resistance surveillance*  
Advisor: Prof. Michalis Vazirgiannis
- **High School Diploma, Honors** Jun. 2001  
2<sup>nd</sup> High School of Peristeri (Lyceum), Athens, Greece  
**GPA: 19.2/20** (Class rank: 1<sup>st</sup>)

## RESEARCH EXPERIENCE

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- **Postdoctoral Research Associate** Sept. 2009 – present  
**Elemento Lab: Cancer Systems Biology and Translational Genomics**  
*Institute of Computational Biomedicine (ICB), Weill Cornell Medical College*  
PI: Assist. Prof. Olivier Elemento  
Conducting research in the area of computational genomics. Working on computational approaches deep sequencing data (ChIP-seq), regulatory network inference and visualization.
- **Research Fellow** Sept. 2005 – Jul. 2009  
**Virtual Reality & Human-Computer Interaction Laboratory**  
*University of Peloponnese*  
Advisors: Assist. Prof. George Lepouras, Assoc. Prof. Elias Manolakos  
Conducting research in the area of proteomics analysis and visualization (2D-GE, LC-MS). Investigating integrative approaches for visualizing multidimensional data which originate from all steps of the proteomics workflow. Designed ontologies to model basic bioinformatics concepts. Designed and developed a software tool aiming at improving the accuracy and effectiveness of the proteomics results interpretation through the use of advanced visualization techniques. Advised to successful completion one (1) undergraduate thesis project in the general area of Bioinformatics that resulted in one (1) conference paper. Tasks included: studying the application of clustering methods to mass-spectra peak-lists and developing a tool for extracting, visualizing and validating protein clusters. Results available in publications.
- **Research Associate** Sept. 2005 – Jul. 2009  
**Bioinformatics & Medical Informatics Group**  
*Biomedical Research Foundation, Academy of Athens*  
Advisor: Dr. Spiros D. Garbis  
Studied and practiced on the 2DGE-MS and LC-MS proteomics experiments workflows. Used image analysis

software tools (PDQuest, Melanie), installed and worked on identification search engines (MASCOT server, ProteinPilot), used software suites for aggregating proteomics data and applied meta-data analysis using tools complementing proteomics experiments (MS-Screener, MATLAB, OpenDX). Assisted to successful completion of two (4) high-throughput LC-MS experiments that led to four (4) poster papers and one (1) journal paper. Results available in publications.

- **Research Associate** Athens Univ. of Econ. & Bus. Jun. 2005 – Dec. 2005

**Data and Web Mining Team (DB-NET)**

Advisor: Prof. Michalis Vazirgiannis

Designed and developed a mechanism that detects hidden and previously unknown patterns on large public health datasets, in terms of association rules, which can provide surveillance warnings. Proposed a web enabled framework architecture for integrating public health data from multiple sources, discovering and storing association rules for future analysis. Developed the proposed architecture and evaluated it using data from the WHONET software installed in many Greek hospitals of the "Greek System for Surveillance of Antimicrobial Resistance" (GSSAR) network. The research prototype system "Data mining techniques for monitoring antibiotic resistance", was adopted by the GSSAR network. Results available in publications.

URL: <http://195.251.235.83/en/>, <http://www.mednet.gr/whonet/>

## PUBLICATIONS

### Book Chapters

- **E. G. Giannopoulou**, S. Kossida. Data Mining in the post-genomic era. In Eugenia Giannopoulou (Ed.), *Data Mining in Medical and Biological Research*. Vienna, Austria: I-Tech Education and Publishing, 2008.
- **E. G. Giannopoulou**, A. Vlahou, S. Kossida. Proteomics. In Sofia Kossida (Ed.), *Bioinformatics, Capabilities and Potential*, Athens, Greece, 2008. (available in greek)

### Journal Papers

- **E. G. Giannopoulou**, S. D. Garbis, A. Vlahou, S. Kossida, G. Lepouras, E. S. Manolakos, Proteomic Feature Maps: A new visualization approach in proteomics analysis, *Journal of Biomedical Informatics*, vol. 42, no. 4, pp 644-653, 2009.
- S. Garbis, S. Tyritzis, T. Roumeliotis, P. Zerefos, Panagiotis, **E. G. Giannopoulou**, et al, "Search for Potential Markers for Prostate Cancer Diagnosis, Prognosis and Treatment in Clinical Tissue Specimens Using Amine-Specific Isobaric Tagging (iTRAQ) with Two-Dimensional Liquid Chromatography and Tandem Mass Spectrometry," *Journal of Proteome Research*, vol. 7, no 8, pp. 3146–3158, 2008.
- A. Katifori, C. Halatsis, G. Lepouras, C. Vassilakis, **E. G. Giannopoulou**, "Ontology Visualization Methods - A Survey," *ACM Computing Surveys*, vol. 39, no. 4, 2007.

### Conference Papers

- **E. G. Giannopoulou**, G. Lepouras, E. Manolakos, "VIP: Visualization of Integrated Proteomics Data", *8<sup>th</sup> IEEE International Conference on Bioinformatics and BioEngineering (BIBE '08)*, Athens, Greece, 2008.
- S. Ventoura, **E. G. Giannopoulou**, E. S. Manolakos, "ProtCV: A Tool for Extracting, Visualizing and Validating Protein Clusters Using Mass Spectra Peak-Lists," *21<sup>st</sup> IEEE International Symposium on Computer Based Medical Systems (CBMS '08)*, Jyvaskyla, Finland, 2008.
- Maria Golemati, Akrivi Katifori, **Eugenia G. Giannopoulou**, Ilias Daradimos, Costas Vassilakis, George Lepouras, Constantin Halatsis, "An Interview-Based User Study on the use of Visualizations for Folder Browsing", *12<sup>th</sup> International Conference on Information Visualisation*, London, UK, 2008.
- **E. G. Giannopoulou**, V. P. Kemerlis, M. Polemis, J. Papaparaskevas, A. C. Vatopoulos, M. Vazirgiannis, "A Large Scale Data Mining Approach to Antibiotic Resistance Surveillance," *20<sup>th</sup> IEEE International Symposium on Computer Based Medical Systems (CBMS '07)*, Maribor, Slovenia, 2007.
- M. Golemati, A. Katifori, **E. G. Giannopoulou**, E. Daradimos, C. Vassilakis, "Evaluating the Significance of the Windows Explorer Visualization in Personal Information Management Browsing Tasks," *11<sup>th</sup> International Conference on Information Visualisation*, Zurich, Switzerland, 2007.
- S. Rapanakis, **E. Giannopoulou**, "Restrictions of cryptography in the modern economic activity," *2<sup>nd</sup> Student Conference of Management Science and Technology*, Athens, Greece, 2004.

### Poster Papers

- **E. G. Giannopoulou**, G. Lepouras, E. S. Manolakos, "Joint Visualization of Proteomic Features", *IEEE Information Visualization Conference 2008 (InfoVis 2008)*, Columbus, Ohio (to appear).
- T. I. Roumeliotis, A. Keramidas, **E. G. Giannopoulou**, et al., "Ex vivo pharmacoproteomic and toxicoproteomic study of  $\gamma$ -tocopherol in DU-145 prostate cancer cells using iTRAQ labeling with 2DLC-nESI-MS-MS," *56<sup>th</sup> ASMS conference on Mass Spectrometry*, Denver, CO, USA, 2008.

- S. D. Garbis, T. Roumeliotis, S. I. Tyritzis, K. Pavlakis, **E. G. Giannopoulou**, et al., "Online Multidimensional LC-LC-nESI-QqTOF-MS-MS Analysis for Novel Protein Biomarkers in Prostate Cancer Using Multi-Phasic Capillary Chromatographic Chemistries," *55<sup>th</sup> ASMS conference on Mass Spectrometry*, Indianapolis, IN, USA, 2007.
- M. Halabalaki, T. Roumeliotis, X. Alexi, **E. G. Giannopoulou**, et al., "Ex vivo Pharmacoproteomics and Toxicoproteomic Evaluation of a Benzofuran Phytoalexin Isolated from *Onobrychis ebenoides* Using the DU-145 Prostate Cancer Cell Line," *55<sup>th</sup> ASMS conference on Mass Spectrometry*, Indianapolis, IN, USA, 2007.
- S. D. Garbis, P. Zerefos, A. Papadopoulou, A. Vlahou, C. Tamvakopoulos, S. Tyritzis, S. Kossida, H. Diaz, S. Vourekas, K. Pavlakis, **E. G. Giannopoulou**, et al., "Quantitative proteomic approaches for the determination of carcinogenesis biomarkers in prostate tissue," *54<sup>th</sup> ASMS conference on Mass Spectrometry*, Seattle, WA, USA, 2006.
- S. D. Garbis, P. Zerefos, A. Papadopoulou, A. Vlahou, C. Tamvakopoulos, S. Kossida, **E. G. Giannopoulou**, et al., "Search for carcinogenesis markers in prostate tissue using differentially labeled iTRAQ tags and gel electrophoresis techniques with multidimensional LC-MS/MS," *The Athenian EuroAmerican Congress of Urology*, Athens, Greece, 2006.

## PROFESSIONAL APPOINTMENTS

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- **Postdoctoral Research Associate** *Institute of Computational Biomedicine (ICB),* Sept. 2009 – present  
**Elemento Lab: Cancer Systems** *Weill Cornell Medical College*  
**Biology and Translational Genomics**  
PI: Assist. Prof. Olivier Elemento  
Conducting research in the area of computational genomics. Working on computational approaches deep sequencing data (ChIP-seq), regulatory network inference and visualization.
  - **Lecturer - Instructor** *N.C. S. R. "Demokritos" &* 25 Jun. – 6 Jul. 2007  
**3<sup>rd</sup> Nano2Life Summer School** *Biomedical Research Foundation,*  
*Academy of Athens*  
Instructed basic Bioinformatics concepts. Hands-on laboratory on Mass Spectrometry tools (MASCOT search engine, ProteinPilot, MSight): *Proteomics and analysis, Non-gel based protein analysis methods*. Group of ~20 attendees. URL: <http://www.imel.demokritos.gr/SummerSchool2007/index.htm>
  - **Lecturer - Instructor** *N.C. S. R. "Demokritos" &* 26 Jun. – 7 Jul. 2006  
**2<sup>nd</sup> Nano2Life Summer School** *Biomedical Research Foundation,*  
*Academy of Athens*  
Instructed basic Bioinformatics concepts. Hands-on laboratory on Mass Spectrometry tools (MASCOT search engine, ProQuant): *Proteomics Technologies, Non-gel based protein analysis methods*. Group of ~20 attendees. URL: <http://www.imel.demokritos.gr/SummerSchool2006/index.htm>
  - **Web developer** *Chemical Safety International* Jul. 2005 – Oct. 2005  
Designed and developed various web applications for environmental management.  
URL: <http://www.chemicalsafety.com>
  - **Software developer – Student Intern** *Cententia Business Solutions S.A.* Oct. 2004 – Jan. 2005  
Designed and developed a method for improving the software development process that enhanced the automation of product releases. URL: <http://www.cententia.com>

## PUBLIC SERVICE

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- **Peer Reviewer** for Bioinformatics, IEEE Transactions on Medical Imaging, BioData Mining 2008 – present
  - **Co-Chair, Program Committee Member**, Seminar series: "Graduate Studies in Computer Science" (more than 200 attendees) Dec. 2004  
Athens Univ. of Econ. and Bus., Department of Computer Science, Athens, Greece
  - **Co-Chair, Program Committee Member**, 1<sup>st</sup> "Debi-Day" Workshop, 2-day hands-on introductory workshop on GNU/Linux (20 attendees) Nov. 2004  
Athens Univ. of Econ. & Bus., CS Dept., Athens, Greece

- **Founder, Board of Directors member, Administrator, Venus** - The web community of the Computer Science Department (over 1,500 registered users). Tasks included: daily administration, moderation of forum discussions, technical articles publishing, organization of technology promotion events. Jan. 2004 – present  
URL: <http://venus.cslab.aueb.gr>  
Athens Univ. of Econ. & Bus., CS Dept., Athens, Greece

## HONORS AND AWARDS

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- *PhD Fellowship*, EU/National program “PENED” Sept. 2005 – Jul. 2009
- *Research Fellowship*, EU/National program “PYTHAGORAS II” Jun. 2005 – Dec. 2005
- Graduated *magna cum laude*, Athens Univ. of Econ. and Bus., CS Dept. Jun. 2005
- *Entered 9<sup>th</sup>* in the CS Dept. of Athens Univ. of Econ. and Bus., after succeeding in nation-wide (“Pan-Hellenic”) examinations Sept. 2001

## SKILLS

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- Experience in both academic research and software development
- Extensive knowledge of proteomics analysis workflows
- Deep understanding of bioinformatics issues
- Hands-on experience in proteomics tools (PDQuest, Melanie, MASCOT server, QS Analyst, ProteinPilot, Proteinscape)
- Hands-on experience in bioinformatics tools, algorithms and databases (Cytoscape, BLAST, FASTA, ClustalW)
- Hands-on experience in Java, C, C++, Perl, Microsoft .NET ({C++,VB,C#}.NET), MATLAB, OpenGL, PowerBuilder
- Experience in SQL, JavaScript, HTML, {Bash/C} Shell Scripting, CGI programming, PHP, JSP, OpenDX

## LANGUAGES

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- Greek (native speaker)
- English (Certificate of Proficiency in English, University of Michigan, Dec. 1998  
Certificate of Proficiency in English, University of Cambridge) Mar. 1999
- Spanish (Diplomas de Espanol como Lengua Extranjera, nivel Intermedio) May 2004
- Elements of French

## REFERENCES

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### **Assist. Prof. George Lepouras**

Department of Computer Science and Technology  
University of Peloponnese

### **Assoc. Prof. Elias Manolakos**

Department of Informatics and Telecommunications  
University of Athens

### **Dr. Spiros D. Garbis**

Biomedical Research Foundation, Academy of Athens

### **Dr. Sophia Kossida**

Biomedical Research Foundation, Academy of Athens

### **Assoc. Prof. Michalis Vazirgiannis**

Department of Computer Science  
Athens University of Economics and Business

### **Assoc. Prof. Dimitris Gritzalis**

Department of Computer Science  
Athens University of Economics and Business