

Petko Bakalov

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Education:

09/2003 – 08/2008 University of California Riverside, **PhD** in Computer Science GPA 3.82/4.0
10/1996 – 10/2001 Technical University Sofia, **MS** in Computer Science GPA 5.68/6.0

Interests:

Database management systems, Geographic Information Systems (GIS), Spatio-temporal databases and Spatio-temporal data mining, Mobile Systems and Vehicular Ad Hoc Networks, Telematics.

Technical Skills:

- Languages: PL/SQL, C/C++, Java, Pascal, VHDL
 - Databases: Oracle, MS SQL-Server, PostgreSQL, BerkleyDB
 - Web Based: XML, HTML, Java Script,
 - Others: Database Design (ER modeling with Oracle Designer), Software design, UML.
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Professional Experience:

Software Developer – ESRI Redlands CA (USA) 06/2005 – present

- **Project: Utility Network** – Design and implementation a new utility-centric graph information model that can support the complex modeling of utility infrastructures. The model is focused on satisfying requirements for improved performance and scalability (by optimized data storage layouts), efficiency and productivity (by modeling of real-world concepts like devices with multiple terminals, inside-plant, etc.), data quality (by enforcing a business rule-based framework which prevents bad data from entering the system), real-time data acquisition (by supporting for field-based telemetry such as Advanced Meter Infrastructure – AMI, and Supervisory Control.

Role in the project: Software Design, Software Development.

- **Project: Network Dataset** – Implementation of the incremental network build algorithm, used to maintain the connectivity information inside the ESRI's transportation network model. The algorithm was further used to implement a new versioning schema for graph data, allowing multiple users to edit the graph in isolation. Proposed and implement a hyperedge extension of the basic transportation model, which allows more efficient graph traversal. The system was used by UPS and FedEx.

Role in the project: Software Design, Software Development.

Graduate Student Researcher – University of California, Riverside (USA) 09/2005 – 09/2008

- **Project: Efficient Indexing for Spatiotemporal Applications** - The goal of this project is to provide efficient query access methods for data whose geometry or location can change over time. Two time-varying spatial attributes are considered: the object position and extent.

Role in the project: Research, Software Design, Software Development.

- **Project: Complex spatiotemporal queries:** Design and implement a database engine able to evaluate complex queries that define a spatio-temporal pattern as a sequence of distinct spatial predicates where the predicate temporal ordering (exact or relative) matters.

Role in the project: Research, Software Design, Software Development.

- **Project: XML filtering for publish-subscribe systems.:** Improve the performance of the XML filtering in publish subscribe systems by utilizing a new tree like indexing structure that organizes the query requests based on their similarity and provides lower bound estimation, needed to prune queries not related to the incoming documents.
Role in the project: Research, Software Design, Software Development.

Teaching Assistant – University of California, Riverside (USA)

09/2003 – 06/2005

- **Courses:** CS 166 Database Management Systems; CS 179g Project in Database Management Systems; CS 120b Introduction to Embedded Systems; CS 005 Introduction to Computer Programming

Database/Software Developer - Fadata, Sofia (Bulgaria)

03/1999 – 09/2003

- **Project: SAPARD** – Integrated web-based information system to support all the business-process activities related to the granting of subsidies under the SAPARD program in Bulgaria.
Role in the project: Database Design, Software Development
- **Project: INISIS** - Information system, based on Oracle platform and technology designed and build for insurance companies like DZI, QBE-Europe, Omniasig;
Role in the project: Database Design, Software Development.
- **Project: RDM** – Offline database replication system, designed and build for DZI insurance company.
Role in the project: Software Development

Teaching Assistant – Technical University - Sofia (Bulgaria)

09/2001 – 06/2002

- **Courses:** BCS47 Computer networks, BCS54.1 Industrial computer networks, PCT09 Object Oriented Programming

Research Activities:

- Published more than 20+ peer reviewed papers. Complete list can be found here - <http://alumni.cs.ucr.edu/~pbakalov/>
- Program committee member: ACM GIS (9 times); GeoProcessing (7 times); SMART (7 times); MobiDE (1 time)
- External reviewer: Journal on Transactions on Knowledge and Data Engineering (TKDE); International Journal on Very Large Data Bases (VLDBJ); International Journal of Databases (IJDB); Journal on Recent Patents in Computer Science (RPCS)
- Invited speaker: **Complex Spatio-Temporal Pattern Queries.** University of California: Riverside, Department of Computer Science and Engineering Colloquia

Awards:

- University of California Riverside – Distinguished Dean’s Fellowship Award
- University of California Riverside – Outstanding Teaching Assistant Award (CSE department)
- University of California Riverside – Outstanding Teaching Assistant Award (Graduate Division)
- Technical University Sofia – Ranked First in the Class of 2002

Certificates:

- Oracle Certified Professional - Oracle Application Developer Rel. 2
- Oracle Certified Professional - Oracle Internet Application Developer

References:

- Prof Vassilis Tsotras (tsotras@cs.ucr.edu) Department of Computer Science, UC Riverside
- Boyko Kotchev (boiko@fadata.bg), CTO, Fadata (<http://www.fadata.bg>)