Konstantinos Tzanakis

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SUMMARY

With hands-on **experience in full-stack development and data science**, I have spent **several years building and optimizing scalable platforms** for the analysis and visualization of large-scale data. I focus on developing robust, user-friendly tools that enable scientific discovery. I have a proven ability to deliver scalable solutions and thrive on **solving complex technical and multidisciplinary challenges**. I work effectively within **interdisciplinary teams**, combining **strong teamwork** and **communication skills**.

PROFESSIONAL EXPERIENCE

04/2024 – Present — Technical University of Munich, Freising, Germany
Research associate

- Contributed as a core member of the international ProteomicsDB development team, collaborating on feature integration, optimization, and maintenance of the ProteomicsDB platform.
- Employed Git-based version control and CI/CD practices to ensure code quality, maintainability, and continuous deployment.
- Performed system administration tasks, including LPAR configuration on IBM Power 8/9 machines and SAP HANA setup, to support a robust back-end infrastructure used by ProteomicsDB.
- Developed SAP HANA calculation views integrated with xsodata services to enable efficient management and access of proteomics data.
- Implemented Vue.js-based front-end components to enhance interactive data visualization.
- Applied normalization methods, clustering techniques and Gene Ontology enrichment on Mass Spectrometry datasets from 20 barley varieties for the "Proteomes That Feed the World" initiative.
- Supervision of internship, working and master students.

10/2016 – 03/2024 — Bielefeld University, Bielefeld, Germany
Research associate and doctoral researcher

- Designed and developed MetHoS, a cloud-based platform in Java for large-scale processing, storage and analysis of metabolomics data.
- Acquired and managed computational resources from the de.NBI cloud using OpenStack.
- Set up a computer cluster for distributed storage and analysis of metabolomics data.
- Achieved parallel processing using KNIME in combination with Apache Spark.
- Accomplished distributed storage utilizing Apache Cassandra database.
- Implemented functions for distributed analysis using Datasets and Dataframes of Apache Spark.
- Integrated all above software tools in MetHoS cloud platform with Spring Boot using Java, HTML, JavaScript, CSS, Ajax and jQuery.
- Implemented visualization methods for the results of data analyses using the D3 JavaScript library.
- Processed, stored and analyzed 1.1Tb of data, ending up to more than 1 billion records in Cassandra database, while reducing the processing and analysis time from several days to only 6 hours.
- Optimized the back-end of MetHoS by integrating Spark-Cassandra Connector, achieving data locality while reducing both network traffic and processing times.
- Extended the statistical analysis features of MetHoS using Apache Spark MLlib in Java.

EDUCATION AND TRAINING

10/2016 – 06/2024 Bielefeld University, Bielefeld, Germany

Ph.D. in Bioinformatics (Dr. rer. nat.)

Thesis: Large-scale storage, analysis, and integration of metabolomics data.

Member of German-Canadian DFG International Research Training Group (1906/1): Computational Methods for the Analysis of the Diversity and Dynamics of Genomes (DiDy).

- Computational methods for storing and analyzing mass spectrometry-based data on the cloud.
- Teaching of semester lectures with the title "Software tools in bioinformatics".
- Research visit at Hallam Lab, Microbiology & Immunology, University of British Columbia (UBC), Vancouver, Canada (05/2018 - 10/2018).

02/2014 – 02/2016 National and Kapodistrian University of Athens, Athens, Greece

Master in Bioinformatics

Thesis: Genomic Imbalances in Cancer via Karyotypic Analysis.

- Programming Languages & Software Tools in Bioinformatics, Data structures and algorithms
- Statistics in Bioinformatics, Molecular Biology and Genomics, Molecular Recognition
- Computational Analysis of Biomolecular Structures, Biomolecular Structure and Function

09/2007 – 11/2012 University Of Macedonia, Thessaloniki, Greece

Bachelor in Applied Informatics

Thesis: Learning Languages via Internet - A Practical Approach to the English Language.

- Information Systems, Computer Architecture
- Programming Languages, Statistical Analyses and Mathematics

SKILLS

Programming/Scripting Languages	**Javascript, Java, Perl, C, Python, Bash/Shell**
Frameworks	**Vue, React, D3, Thymeleaf, Spring Boot, Apache Spark**
Databases & Query Languages	**SAP HANA, Apache Cassandra, MySQL, SQL, CQL**
Web Technologies	**HTML, CSS, jQuery, Ajax, Bootstrap, MUI**
Data Analysis	**R, Apache Spark MLlib, KNIME**
Development Tools	**VS Code, Git, SAP HANA Studio, R Studio, NetBeans, MySQL Workbench**
Cloud Platforms & Services	**Docker, OpenStack**
Systems	**IBM Power 8 and 9, Hardware Management Console**
Other	**LaTeX**
Familiarity with	**Nextflow, Terraform, AWS S3, GKE, GCP**

LANGUAGES

- Greek (Mother tongue)
- English (Fluent/Professional, C2)
- German (Intermediate, B1)