

ELENA EREMI

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PROFESSIONAL PROFILE

Data-oriented Software Engineer with an M.S. in Computer Science and a strong mathematical foundation. Expertise in conceptual data modeling, ontology development, and ETL pipelines. Brings 4+ years of hands-on database administration experience, combined with advanced academic research in semantic web technologies. Proven ability to translate functional requirements into structured data models, integrate relational (PostgreSQL) and graph databases (Neo4j), and ensure data consistency, metadata management, and business semantics alignment.

EDUCATION

Ovidius University of Constanța

Master of Science – Distributed Multi-Modal Virtual Environments

– Dissertation Thesis: *Ontology-Based Software Tool for Medical Knowledge Extraction.*

Constanța, Romania

Sept. 2024 – Jul. 2026

Ovidius University of Constanța

Bachelor of Science in Mathematics

– Thesis: *The Design and Functionality of Modern Web Pages*

Constanța, Romania

Sept. 2019 – Jul. 2022

PROFESSIONAL EXPERIENCE

Semantic Data Modeler (Academic Project)

Ovidius University of Constanța

Aug. 2026 – Present

Constanța, Romania

- Contributed to the development of a domain ontology (OWL) for traditional crafts under academic supervision, proposing conceptual data models and structural ideas.
- Drafted conceptual taxonomies (TBox), populated data instances (ABox), and formulated SWRL rules in Protégé, iteratively refining the models based on academic feedback.
- Assisted in aligning the metadata with semantic web standards, supporting the preparation of the underlying data architecture for an upcoming scientific publication.

Database & Backend Administrator

Freelance / Self-employed

Sept. 2021 – Present

Constanța, Romania

- Manage the backend architecture and relational database schemas (MySQL) for 6 business and e-commerce websites, ensuring high availability and data consistency.
- Implement and debug complex data synchronization workflows and external API integrations, successfully resolving transactional webhook delivery failures (e.g., Stripe) to maintain data integrity.
- Execute secure database migrations, execute complex SQL queries, and manage backup/restoration procedures without structural data loss.
- Translate functional business requirements into structured backend configurations, acting as the technical owner for data alignment across web services.

TECHNICAL PROJECTS

RDB to Ontology Mapper (rdb2onto)

PostgreSQL, Docker, PHP (Laravel), OWL

2026

github.com/elena33e/rdb2onto-mapper

- Built a backend application that extracts complex metadata from PostgreSQL databases (PK/FK, constraints) to evaluate semantic richness and data lineage.
- Automated the transformation of relational schemas (RDB) into conceptual ontologies (TBox in OWL/XML) and data mapping generation (ABox via R2RML).
- Containerized the development environment and database using Docker, ensuring architectural reproducibility.

Textile Manufacturing Ontology

Python, SHACL, OWL, Semantic Modeling

2026

github.com/elena33e/textile-manufacturing-ontology

- Designed a formal domain ontology in OWL to represent manufacturing processes, structuring core entities, properties, and relationships.
- Implemented a SHACL-based validation script in Python to check data consistency and enforce basic structural constraints against the ontology.

- Applied semantic modeling principles to ensure metadata clarity and standardized organization of domain concepts.

Therapeutica (Clinical Decision Support System)

Sept. 2025 – Jul. 2026

Java (Spring Boot), Neo4j, PostgreSQL, Python

github.com/elena33e/therapeutica

- **Awarded 3rd Place** at the ESTIC 2026 Informatics and Information Technologies Competition.
- Built a decision support system integrating relational databases (PostgreSQL) with graph databases (Neo4j) for navigating structured medical vocabularies.
- Developed an OCR pipeline using Python and PaddleOCR to extract, parse, and standardize tabular data from physical medical documents.

AI Adoption & Workforce Impact Analysis

2026

Apache Spark, Java, SQL

github.com/elena33e/Spark_AI_Adoption_Analysis

- Developed a distributed data analysis system to quantify the economic impact of AI technology adoption, processing over 150,000 structured records.
- Implemented an ETL pipeline for loading, structural validation, and data cleaning using Spark APIs.
- Designed and structured the output datasets to support complex analytical SQL queries, ensuring scalable reporting on economic workforce trends.

CERTIFICATIONS

Semantic Web Technologies

2025

openHPI (Hasso Plattner Institute)

Dr. Harald Sack

- Completed advanced training on W3C standards (RDF, RDFS, OWL, SPARQL), knowledge representation, description logics, and semantic graph storage[cite: 4].

TECHNICAL SKILLS & COMPETENCIES

Data Modeling & Semantics: Conceptual/Logical Modeling, OWL, R2RML, SPARQL, SWRL, Metadata Management

Big Data & Engineering: Apache Spark, ETL Pipelines, Distributed Architectures

Databases: PostgreSQL, MySQL, SQLite, Neo4j (Graph DB), Relational Schemas

Programming Languages: Java, Python, SQL, PHP (Laravel)

Platform & DevOps: Docker, Git (GitHub), Maven, API Integration, Webhooks

Professional Skills: Business Semantics Alignment, Analytical problem-solving, Data Consistency