**ILYA FROLOV**

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<https://www.linkedin.com/in/ilyafrol/>

* PhD Scientist and Software Developer with 5+ years of research and applied experience in machine learning, statistical modeling, and AI-driven systems.
* Published author with 3 peer-reviewed journal papers and a CRC Press book.
* Skilled in Python, PyTorch, TensorFlow, SQL, and cloud platforms (AWS), with hands-on expertise developing data pipelines, visualization dashboards, and backend services.
* Adept at bridging experimental research with production-ready software, leveraging ML, deep learning, and generative AI to solve complex problems.

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**CORE COMPETENCIES**

▪ Machine Learning & AI: Deep learning, regression, clustering, causal inference, optimization, anomaly detection, recommendation systems

▪ Generative AI & LLMs: Prompt engineering, retrieval-augmented generation (RAG), multi-modal data processing, AI-assisted development (Copilot, Cursor)

▪ Frameworks & Tools: PyTorch, TensorFlow, Hugging Face, scikit-learn, Unity, SQL, Jenkins, AWS (EC2, S3), Docker

▪ Statistical Modeling & Data Analysis: Bayesian methods, hypothesis testing, experimental design, data visualization (Matplotlib, Seaborn, ggplot2, Plotly)

▪ Software Engineering: Python, C#, Java, REST APIs, .NET Core, Spring Boot, distributed systems, CI/CD pipelines

▪ Research & Publications: Peer-reviewed journal articles, international collaborations, author of book on material modeling

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**PROFESSIONAL EXPERIENCE**

**Software Developer Sep 2024 - Present**

Unit Robotics Ltd., Israel

Designed and implemented AI-enhanced robotic warehouse management system integrating .NET Core (backend), Python (algorithms), SQL, Unity (visualization).

* Built real-time visualization dashboards in Unity for monitoring warehouse operations.
* Applied test-driven development with MSTest, improving system reliability.
* Optimized backend with bulk SQL operations, improving data throughput and performance.

**Software Developer Nov 2023 – Aug 2024**

Y.G. Lima Global Ltd., Israel

Developed media analytics platform with C# .NET, SQL, and JavaScript.

* Integrated AI-powered traffic quality control using bot tracking with Google reCAPTCHA.
* Retrieved and analyzed campaign performance data from Facebook Business APIs.
* Increased customer engagement by 15% via automated data pulls and notifications.

**Software Developer Oct 2022 – Oct 2023**

Independent contractor, Israel

Built RESTful platform for online board game sales using Java Spring Boot, Hibernate, MySQL.

* Implemented Spring Security + JWT authentication.
* Automated CI/CD pipelines with Jenkins and deployed solutions to AWS EC2.

**Research & Teaching Assistant (PhD Researcher) Nov 2018 – Mar 2023**

Ariel University, Israel

* Conducted experimental and numerical modeling of concrete behavior using statistical and ML methods.
* Published 3 peer-reviewed journal papers and a CRC Press book on stress-strain modeling.
* Applied Python, MATLAB, and C# for large-scale data analysis, algorithm development, and custom test automation.
* Taught and supervised undergraduate courses, strengthening communication and presentation skills.

**PUBLICATIONS**

* 3 peer-reviewed journal papers in material modeling (Applied Sciences, MDPI)
* Book: Limit States of Compressed Concrete Elements by Transverse Deformations, CRC Press, 2025
* Full list: <https://doi.org/10.3390/app11188460>, <https://doi.org/10.3390/ma15176064>, <https://doi.org/10.3390/ma17020355>, <https://doi.org/10.1201/9781003474388>

**EDUCATION**

**PhD, Civil Engineering 2018 – 2023**

Ariel University, Israel

**VOLUNTEERING**

**Mentor in the First Lego League Aug 2024 – Present**

Toronto, ON