George Spyrou

Γιώργος Σπύρου

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EDUCATION

University of Waterloo — Jan. 2027 – Jan. 2029 (expected)
Incoming Master of Mathematics (MMath) Student, Computer Science (thesis-based)

- Admitted for the Winter 2027 term. Supervisor: Prof. Kimon Fountoulakis.

National and Kapodistrian University of Athens (NKUA) — Oct. 2022 – Jun. 2026
BSc in Informatics and Telecommunications. Specialization: Data and Knowledge Management

- Final GPA: **7.76/10** ("Very Good").
- Undergraduate thesis: *SPHINX: A Configurable Framework for Generating Synthetic KGQA Benchmarks*. Grade: **10/10**. Advisors: Prof. Manolis Koubarakis and Sergios Kefalidis (PhD candidate).
- Relevant mathematics coursework: Calculus I & II, Linear Algebra, Discrete Mathematics, Probability & Statistics, Numerical Analysis.
- Relevant AI/ML coursework: Artificial Intelligence I, Artificial Intelligence II (Deep Learning for Natural Language Processing; 10/10), Pattern Recognition – Machine Learning, Computational Theory of Machine Learning (9/10).
- Relevant CS coursework: Algorithms and Complexity, Theory of Computation, Computational Complexity, Operating Systems, Systems Programming, Implementation of Database Management Systems, Software Development for Information Systems (10/10).

Certificate of Pedagogical and Teaching Competence — Aug. 2026
NKUA, Department of Informatics and Telecommunications

- Grade: **8.50/10**; 30 ECTS.

Athens College (Hellenic-American Educational Foundation) — 2022
High School Diploma, Grade: 19.8/20 ("Excellent," with Honors / "Μετ' Επαίνου")

RESEARCH EXPERIENCE

Waterloo Computational Learning (WatCL) Lab — Sep. 2026 – Present
Researcher / Incoming MMath Student, University of Waterloo
Supervisor: Prof. Kimon Fountoulakis

- Conducting research on the autoformalization of mathematics.
- Implemented and tested source-processing and planning software on Vershynin's *High-Dimensional Probability*, indexing claims and dependencies and linking planned Lean declarations to source passages.
- Ran self-hosted Leanstral and DeepSeek autoformalization experiments and analyzed source-statement mismatches and proof-completion failures. Developing a phased workflow that separates source interpretation and statement review from proof generation and repair; end-to-end integration and evaluation remain in progress.

DIT AI Team, NKUA | Undergraduate Researcher — Apr. 2024 – Jun. 2026
Advisors: Prof. Manolis Koubarakis and Sergios Kefalidis (PhD candidate)

- Developed SPHINX, a framework for generating synthetic datasets to train and evaluate Knowledge Graph Question Answering (KGQA) systems. Extended KGQAGen beyond its Wikidata-specific design and evaluated the framework across three knowledge graphs.
- Assisted Sergios Kefalidis on his PhD research into KGQA systems, mainly with experiments and evaluation.

MANUSCRIPTS IN PREPARATION

- *Principles for Autoformalizing Numerical Methods.* Manuscript in preparation with the WatCL Lab, 2026.

PUBLISHED CONFERENCE ABSTRACTS

Co-authored work in public mental health, with contributions to statistical analysis and digital systems.

- Skali T., Mouliou M., Mavromichali K., **Spyrou G.**, Katsafadou V.S. "Evaluating the Impact of an Arts on Prescription Programme on Psychiatric Patients' Well-Being." *European Journal of Public Health*, 35(Suppl. 4), ckaf161.746, 2025. doi:10.1093/eurpub/ckaf161.746. Conference abstract; PechaKucha presentation at the 18th European Public Health Conference, Helsinki, Finland, 12–14 Nov. 2025 (presented by T. Skali).
- Skali T., Theodoroulakis M., Sapouna V., **Spyrou G.** "The 10306 Psychosocial Support Helpline-A Scalable Model for Crisis Response and Brief Psychotherapy." *European Journal of Public Health*, 35(Suppl. 4), ckaf161.747, 2025. doi:10.1093/eurpub/ckaf161.747. Conference abstract; PechaKucha presentation at the 18th European Public Health Conference, Helsinki, Finland, 12–14 Nov. 2025 (presented by T. Skali).

CONFERENCE PRESENTATIONS

- Sapouna V., **Spyrou G.** "The 10306 Psychosocial Support Helpline: The Digital Environment of the Service and the Use of New Technologies and Automated Processes for the Mental Health of Callers and Staff." *33rd Panhellenic Congress of Psychiatry*, Ioannina, Greece, 15–18 May 2025. Roundtable contribution, presented by T. Skali; chaired by M. Theodoroulakis.

TEACHING EXPERIENCE

Teaching Assistant (Lab), NKUA — Mar. 2024 – Present

- "Introduction to Programming" lab (Oct. 2026 – Present).
- Delivered a guest lecture, "Debugging Memory Errors with Valgrind", to the full first-year cohort of the "Introduction to Programming" course (Dec. 2025).
- "Introduction to Programming" lab (Oct. 2025 – Feb. 2026).
- "Data Structures and Programming Techniques" lab (Mar. 2025 – Jun. 2025).
- "Introduction to Programming" lab (Oct. 2024 – Feb. 2025).
- "Data Structures and Programming Techniques" lab (Mar. 2024 – Jun. 2024).

Program Assistant, CTY Greece at Anatolia College — Summer 2026
The Magic of Mathematical Thinking, Summer Program (Athens)

- Delivered selected lessons and supported the lead instructor with the rest of the curriculum, while also running the program's daily activities.

Instructor, CTY Greece at Anatolia College — Mar. 2026
Video Game Development, Weekend Program (Athens)

Private Tutor — Sep. 2025 – Jun. 2026
High School Mathematics

- Provided private mathematics tutoring throughout the 2025 – 2026 school year.

Teaching Assistant, CTY Greece at Anatolia College — Apr. 2024
International Relations, Weekend Program (Athens)

PROFESSIONAL EXPERIENCE

10306 Psychosocial Support Helpline — Jul. 2023 – Present

Administrative & Technical Support Specialist (full-time; alongside full-time studies until Jun. 2026)

- Maintain and provide technical support for the 10306 Educational Toolkit and the service's digital platform.
- Run the helpline's social media and public outreach, and handle day-to-day technical work for the Greek Ministry of Health's national service.

CTY Greece at Anatolia College | Residential Assistant — Summers 2023 and 2024

Older Students Residential Summer Program (Thessaloniki)

SELECTED PROJECTS

Response Clarity Classification

Artificial Intelligence II coursework, NKUA

- Compared sparse features, static embeddings, fine-tuned transformer encoders, prompted LLMs, and an agent pipeline for classifying political interview responses. Evaluated the systems using macro F1 on a shared held-out test set.

Adaptive Dictionary Compression for String Columns

- Implemented the scheme from *Adaptive Compression for Fast Scans on String Columns* (SIGMOD 2021) in C++14, including compression, decompression, and query operators. Benchmarked against DuckDB over Parquet.

File Synchronization System

- Built a Linux file synchronization daemon in C, using `inotify`, worker processes, and named pipes, with a command-line interface and a Bash status script.

Heap File and External Merge Sort

Team databases coursework, NKUA

- Worked on an external merge sort in C over a heap file and block-based buffer manager for datasets that do not fit in memory; implemented the b-way merge component.

TECHNICAL SKILLS

- **Programming:** C, C++, Python (advanced); SQL, SPARQL, MATLAB (intermediate); Java (basic).
- **Machine Learning:** PyTorch, transformer fine-tuning, LLM prompting and evaluation.
- **Tools & Platforms:** Linux, Bash, GNU Make, Kaggle, Google Colab, LaTeX.

LANGUAGES

Greek: Native. **English:** Cambridge C2 Proficiency (2019). **German:** Goethe-Zertifikat B2 (2021).

AWARDS & DISTINCTIONS

- CTY Greece talent search recognition (SCAT & STB), 2017 – 2020.
- Honorable Mention, "Kangaroo" Mathematics Competition (2016) and Panhellenic "Aristotelis" Physics Competition (2016).

ADDITIONAL ACADEMIC TRAINING

- Cryptology summer studies, Athens, 2020.
- International Relations studies, Anatolia College, 2018 – 2019.

INTERESTS

- **Music:** Part-time trombone studies (Philippos Nakas Conservatory), music theory, harmony and solfège.
- **Sports:** Football (A.E. Kerameikos, Athens FA); formerly also played tennis.