Constantinos Petrides

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Education

•BSc. Physics - Environmental Physics and Meteorology *2025*
National and Kapodistrian University of Athens, Athens, Greece 7/10

Courses: Analysis I-II, Probability Theory, Physics I-II-III-IV, Classical Mechanics, Hamiltonian Mechanics, Mathematical Physics I-II, Ordinary Differential Equations, Linear Algebra, Complex Analysis, Electronic Physics, Computational Physics, Nuclear Physics, Electromagnetism I-II, Fluid Dynamics and Geophysical Fluid Dynamics, Environmental Physics, Quantum Mechanics, Statistical Physics, Astrophysics, Climate Change, Atmospheric Boundary Layer, Air Quality, Renewable Energy Sources and Atmospheric Dynamics

•Cypriot Apolitirion (High School Diploma) *2017*
Kykos B High School, Nicosia,Cyprus 18.6/20

Courses: Programming, Advanced Mathematics, Advanced Physics, Greek, Italian, Spanish

Professional Experience

•Undergraduate Researcher *2023-2025*
National and Kapodistrian University of Athens, Greece

•Undergraduate Teaching Assistant *2025*
National and Kapodistrian University of Athens, Greece

•Military Service *2018*
Cyprus National Guard, Nicosia, Cyprus

Research Experience

•Bias Correction of Air Quality Models
FAIRMODE WG5 (European Commission JRC & EEA), via NKUA, Athens, Greece 2025

- Implemented bias correction techniques on air quality model outputs ($PM_{2.5}$, NO_2, O_3) using spatial interpolation methods and machine learning techniques.
- **Authors:** FAIRMODE WG5 (NKUA contributors: E. Bossioli, C. Petrides)
- **Status:** Ongoing project; initial analysis available at FAIRMODE

•A Hybrid Quantum–Classical Solver for the Incompressible Navier–Stokes Equations
GitHub repository 2025

- Implemented a solver for the incompressible Navier-Stokes equations using the classical SIMPLE method and a hybrid classical-quantum approach for pressure correction. Demonstrated integration of quantum algorithms (VQE) within computational fluid dynamics.
- **Authors:** C. Petrides
- **Repository:** GitHub

•NOx–Ozone Relationship Modeling Using a Machine Learning Approach *2024*
GitHub repository

- Developed models to analyze and predict the nonlinear relationship between NO_x (nitrogen oxides) and ozone concentrations using methods such as regression analysis, support vector machines, random forests, and neural networks, effectively capturing complex dependencies in environmental data.
- **Authors:** C. Petrides
- **Repository:** GitHub

•Numerical Simulation of the 2D Shallow Water Equations *2023*
GitHub repository

- A shallow water simulation designed to model fluid dynamics, visualize surface elevations and velocity fields, and analyze key parameters such as the Rossby radius and wave propagation speeds under various initial conditions.
- **Author:** C. Petrides
- **Repository:** GitHub

•Time Series Forecasting of Meteorological Data Using Machine Learning and Statistical Models *2023*
GitHub repository

- Developed and evaluated forecasting models (ETS, Prophet, LSTM, GRU, Random Forest) to predict temperature trends from historical weather data. Applied feature engineering and model tuning to enhance accuracy, demonstrating skills in both statistical and deep learning time series analysis..
- **Author:** C. Petrides
- **Repository:** GitHub

Conferences & Seminars

- **Attendee, From Evidence to Impact: Strengthening Research, Policy, and Capacity Ecosystems** *2025*
  UN SDSN, European Commission JRC, Maldives Bureau of Statistics
- **Participant, 6th Pan-Cyprian Student-Teachers Conference in Natural Sciences, Nicosia, Cyprus** *2017*
  Cyprus Ministry of Education, Sport and Youth
- **Participant, 5th Pan-Cyprian Student-Teachers Conference in Natural Sciences, Nicosia, Cyprus** *2016*
  Cyprus Ministry of Education, Sport and Youth

Awards

- **Municipality of Kyrenia Award** *2017*
  Municipality of Kyrenia Academic Achievement Award
- **Academic Achievement Award** *2017*
  Kykkos B High School, Nicosia, Cyprus
- **Innovation Award for the presentation of "Whisper Dishes"** *2017*
  6th Pan-Cyprian Student-Teachers Conference in Natural Sciences, Paphos, Cyprus
- **Innovation Award for the presentation of "Solar Air Heater"** *2016*
  5th Pan-Cyprian Student-Teachers Conference in Natural Sciences, Nicosia, Cyprus

Technical Skills

Languages: Greek (native), English (proficient), Spanish, Italian and BSL (elementary)
Developer Tools: Python, C++, SQL, R, Java, HTML, CSS