PANAGOTIS **LIAMPAS**

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EDUCATION

JUNE 2023
SENIOR HIGH SCHOOL DIPLOMA, MANDOULIDES SCHOOL
G.P.A: 19.8 on a 20.0 scale

JUNE 2020
JUNIOR HIGH SCHOOL DIPLOMA, MANDOULIDES SCHOOL
G.P.A: 19.9 on a 20.0 scale

SKILLS

Language Skills
- English: CPE (C*ertificate of Proficiency in English)* (CEFR C2 level)
- French: Delf (CEFR B1 Level)

Technology Skills
- Building and programming autonomous robots (including mechanical components like motors) with Arduino and Raspberry Pi circuit boards.
- Designing PCB circuit boards using Fritzing and EasyEDA.
- Programming Android applications using Android Studio and Windows UWP or .NET apps using Visual Studio and connecting them with online databases.
- Programming in C++, C#, Java and Python.
- Website designing and data dashboard using HTML, CSS and JavaScript along with database access using PHP.
- Building physics simulations using Unity.
- Internet of Things connectivity, using LoRaWAN modules and sensors and the TTN network, or Wi-Fi and GSM modules along with arduino and the suitable sensors. I can connect these to an online database using PHP and SQL.
- Knowledge in Computer Vision and Machine Learning, and implementation using the Python libraries TensorFlow and OpenCV.
- Experience in training Neural Networks using TensorFlow, as well as applying Q-learning for determining the optimal policy for a Markov Decision Process.
- Knowledge in inverse kinematics and control loop mechanisms (like PID controller).
- Knowledge in Dynamical Systems and predicting their evolution, read "Nonlinear Dynamics And Chaos" by Steven H. Strogatz.
- Knowledge in Braitenberg Vehicles and their properties, as well as their connection to human psychology, read "Vehicles: Experiments in Synthetic Psychology" by Valentino Braitenberg.
- Knowledge in Robotics, Localization, Mapping and Planning, read "Probabilistic Robotics" by Sebastian Thrun.

PROJECTS

Technology and Programming

- A remotely controlled prototype of a rover with integrated sensors that can potentially be used to determine the habitability of a planet and show the data, the results and the rover's route in a website, an android app and a windows app. ([Website](), [GitHub]())
- An autonomous robot that can detect objects, track, and catch them with its robotic hand, using computer vision and machine learning. ([GitHub]())
- A system which uses machine learning to automatically detect empty parking lots and highlight them in a website, which was given for use by the municipality and the local community to solve the problem of the difficulty finding parking spaces. ([Municipality Website](), [System Website](), [GitHub]())
- A system that measures the humidity of the soil under some plants and sends the data to a website to be used to determine the amount of irrigation needed. ([Website](), [GitHub]())

RESEARCH

Dr. Kevrekidis (Johns Hopkins):
- Training a Neural Network (using TensorFlow) to predict the behavior of the Reduced MSP Model, from the dynamical system described in the paper: "[On the parameter combinations that matter and on those that do not]()", based on data derived from time integration of the system with various parameters and start states, using the Runge-Kutta method.

Dr. Koumoutsakos (Harvard):
- Implementing a simulated environment for Braitenberg vehicles, where there are multiple sources of different types and some constrained areas where the vehicles cannot enter. We examine their behavior when multiple vehicles interact with each other, with many sources and many constrained areas.

Mine:
- **Wrote a research paper** called "[Risk-averse Batch Active Inverse Reward Design]()": an improved version of "[Active Inverse Reward Design]()", to improve safety and robustness of AI models and reduce uncertain, potentially dangerous behaviors after deployment. Specifically, I implemented a process that finds the intended reward function by asking queries to the human, and repeating that process on real-world data, allowing its adaptability to new environments and improving its efficiency. It also takes the actions that are the most certain, increasing the safety and control over the process.

OLYMPIADS

- **Mathematics**

2023 Silver Medal (1 place from Gold) in the **2022 International Mathematical Olympiad (IMO)** in Chiba, Japan

2022 Silver Medal in the **2022 International Mathematical Olympiad (IMO)** in Oslo, Norway

2023 Silver Medal (1 place from Gold) in the **Balkan Mathematical Olympiad (BMO)** in Turkey

2022 Silver Medal in the **Balkan Mathematical Olympiad (BMO)** in Cyprus

2023 Gold Medal in the **National Mathematic Olympiad "Archimedes"**

2022 Gold Medal in the **National Mathematic Olympiad "Archimedes"**

2020 Silver Medal in the **National Mathematic Olympiad "Archimedes"**

- **Astronomy – Astrophysics**

2021 Bronze Medal in the 14th **International Olympiad in Astronomy and Astrophysics (IOAA)** in Bogota, Colombia.
2021 Silver Medal in the National Astronomy and Astrophysics Competition

- **Informatics**

2023 Bronze Medal in the **Balkan Olympiad in Informatics** in Slovenia
2021 Honorable Mention (2 places from Bronze) in **Balkan Olympiad in Informatics** (online)
2023 Participated in the **International Olympiad in Informatics** in Hungary
2022 Participated in the **International Olympiad in Informatics** in Indonesia
2021 Participated in the **International Olympiad in Informatics** online.
2023 1st Place in the National Informatics Competition and became member of the **National Team** for the 2023 International Olympiad in Informatics and 2023 Balkan Olympiad in Informatics.
2021 1st Place in the National Informatics Competition and became member of the **National Team** for the 2021 International Olympiad in Informatics and 2021 Balkan Olympiad in Informatics.
2022 3rd Place in the National Informatics Competition and became member of the **National Team** for the 2022 International Olympiad in Informatics and 2022 Balkan Olympiad in Informatics.

PROGRAMS/EXTRACURRICULARS

- **Won the Third Prize (4th-8th place), and $1000 in funding** (and $500 scholarship for all participants), in the Non-Trivial Fellowship, for designing the RBAIRD process described in the research section.
- Participating in the TKS program Global Virtual Innovate.
- Participated in the Mathematical Summer in Paris 2023 summer program.

INITIATIVES

- **Volunteer Coordinator at a Climate Science Olympiad 2024 team**, responsible for moderating the discussions between all the volunteers of our team, coordindate the meetings and independent initiatives of the members, making sure everyone is an equal, active member, and our team is inclusive to all of them. The team aspires to educate and raise awareness about climate change, by organizing podcasts, interviews, posting blogs about various subareas of climate change issues and solutions, and most importantly coordinate initiatives that each member will take in its own community, municipality, or even country, while all having a common goal.

MENTORING/TUTORING

2022/23 Mentoring of the robotics team of school "Mandoulides" for their participation in the National Robotics Competition FLL.
2022/23 & 2023/24 Mathematics and Informatics Olympiad tutoring for students at my school.

VOLUNTEERING

- **2 weeks volunteering at Arcturos**, taking care of Greek Shepherds on November 13th-26th, for 8 hours/day.
- A volunteer at **Greenpeace Greece** team of Thessaloniki, for an initiative to identify all the public water taps of Thessaloniki, inform citizens to use them to fill their own bottles, and convince the

municipality to fix the malfunctioning ones. I am also a (volunteer) **developer of the website** where those water taps are presented, including their location, status, and additional information.
- Helping in the organization of school events, as well as various types of tasks that are needed for the proper operation of the school.
- Participating in the school volunteering club

ONLINE UNIVERSITY COURSES

Completed the following MITx courses from edX:
- Circuits and Electronics 1: Basic Circuit Analysis
- Circuits and Electronics 2: Amplification, Speed, and Delay ([Certificate](#))