Emmanouil Antonios Platanios

Date of Birth: 07/07/1991
Nationality: Greek
Languages: Greek (native), English (fluent), German (beginner)
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RESEARCH AREAS

- Theoretical artificial intelligence (AI) and machine learning (ML) (I am currently focusing on unsupervised and semi-supervised learning and more specifically, I am trying to introduce self-reflection in the context of machine learning)
- Applications of AI and ML to natural language processing, robotics, computer vision and finance

EDUCATION

2013-now **Carnegie Mellon University – Ph.D. in Machine Learning** USA

- Awarded the **CMU Presidential Fellowship**
- GPA: **4.18** (4.0 scale)
- Advisor: **Prof. Tom M. Mitchell**
- I work on the **Never Ending Language Learning (NELL)** project
- I do research on topics related to **self-reflection in machine learning**:
  - I have developed multiple methods for using unlabeled data to estimate the accuracies of several different classifiers performing the same task, that I have presented at Uncertainty in Artificial Intelligence (**UAI**) in 2014, International Conference in Machine Learning (**ICML**) in 2016, and at Neural Information Processing Systems (**NIPS**) in 2017
  - I have developed a method for performing **low-resource and zero-shot multilingual machine translation**.
  - I am developing a self-reflection mechanism for machine learning systems and I am applying it in NELL
  - I am working on a new framework for learning where agreement among multiple agents is the objective
- I have created and maintain multiple open-source software projects:
  - **TensorFlow Scala:** Machine learning library and API for the TensorFlow framework developed by Google, that is currently being used by multiple researchers and companies (~400 GitHub stars).
  - **Symphony MT:** Machine translation library written in Scala, that supports various models along the whole translation pipeline (i.e., ranging from data preprocessing and vocabulary generation, to multiple encoder and decoder models).
  - **Makina:** Machine learning and optimization library written in Java that includes a scalable implementation of the Probabilistic Soft Logic (PSL) framework.

2013-15 **Carnegie Mellon University – M.S. in Machine Learning** USA

- GPA: 4.18 (4.0 scale)
- Advisor: Prof. Tom M. Mitchell
- Thesis: **Estimating Accuracy from Unlabeled Data**
- Master's degree requirements completed while working towards obtaining my Ph.D. in machine learning

2009-13 **Imperial College London – M.Eng. and ACGI in Electrical and Electronic Engineering** UK

- Integrated Bachelor's and Master's degree
- **Dean's List** for exceptional academic performance (all four years)
- Grade: 91.67% (top 1% of class) with **92.37%** on the final exams - **First-Class Honors Degree**
  - Equivalent to 4.0 GPA in the USA academic system
- Thesis: "Human Motion Classification Using Statistical Machine Learning Methods"
  - Awarded the **Sir Bruce White prize in engineering** for the best final year project
- Third Year Summer Research Project: "Bayesian Machine Learning Methodologies for Modeling Time Series with High Volatility" with significance both for industry (e.g. finance) and academia

WORK EXPERIENCE

2016-17 **Research Consultant at Cubist Systematic Strategies** USA

- Worked for the Advanced Methods Groups (AMG) in new machine learning-driven approaches for end-to-end algorithmic trading systems
- Developed the main pipeline for trading algorithms research and for integrating these algorithms in a new production system

2015 **Research Intern at Microsoft Research** USA

- Manager: **Dr. Eric Horvitz**, Distinguished Scientist and Managing Director of Microsoft Research
- Collaborators: **Dr. Hoifung Poon** and **Dr. Ashish Kapoor**
- First 3 months: Developed a probabilistic logic-based approach for accuracy estimation using unlabeled data, as part of the Literome Project
- Last 3 months: Active learning amidst logical knowledge

2010-13 **Co-Founder, President and Chief Technology Officer (CTO) at Holic** Greece

- Development of an intelligent news reader application
- Development of algorithms utilizing advanced nonparametric Bayesian models for clustering news articles and for user profiling
- Received €400,000 funding from the following investors:
  - Dr. John Coustas, President & CEO of Danaos Corporation
  - Mr. Leon Yohai, Founder & CEO of ZuluTrade

2008-10 **Founder of Project Protasis – Forest Protection** Greece

- Development of a forest fire detection and prevention system
- Development of both hardware and software (involving use of neural networks for recognizing fire and smoke in photos)
- Prototype installed in *"Alsos Syggrou"*, a wooded area in Athens, funded by the Greek government
- Patent approved in Greece (**Patent #: 20110100016**) and international patent pending approval
- Interviewed by CNN, several newspapers, magazines and other TV channels, regarding this project
- Won the 2nd place in the **Microsoft Imagine Cup 2009 Greek Finals** with this project

2010 **Web Designer and Software Developer at Curtainmakers S.A.** Greece

2009-10 **Software Developer at vWorker.com** Greece

2007-09 **Founder of Project Protasis – Home Automation** Greece

- Development of a smart home automation system that controls all electrical appliances, heating systems and water systems and aims to reduce domestic energy consumption while making the lives of homeowners as comfortable as possible
- Development of software, employing several machine learning algorithms
- Funded by the Greek government and more specifically, by the Organization of School Buildings
- Interviewed by NBC, several newspapers, magazines and other TV channels, regarding this project
- Won the **Microsoft Imagine Cup 2008 Greek Finals** with this project and represented Greece in the Imagine Cup 2008 Worldwide Finals, in Paris, France, competing against teams from universities, at age of only 16 and having worked without a team or a mentor

2007-08 **Software Developer and I.T. Professional at Sigma Group Inc.** USA

2006 **Software Developer and I.T. Professional at Embiria S.A.** Greece

RESEARCH PUBLICATIONS

CACM **Never-Ending Learning** 2018
Tom M. Mitchell, William Cohen, Estevam Hruschka, Partha Talukdar, Justin Betteridge, Andrew Carlson, Bhavana Dalvi, Matt Gardner, Bryan Kisiel, Jayant Krishnamurthy, Ni Lao, Kathryn Mazaitis, Tahir Mohammad, Ndapa Nakashole, **Emmanouil A. Platanios**, Alan Ritter, Mehdi Samadi, Burr Settles, Richard Wang, Derry Wijaya, Abhinav Gupta, Xinlei Chen, Abulhair Saparov, Malcolm Greaves, and Max Welling
In Communications of the ACM, May 2018, Vol. 61 No. 5, Pages 103-115, 10.1145/3191513

arXiv **Agreement-based Learning**
Emmanouil A. Platanios
In arXiv (1806.01258)

arXiv **Deep Graphs**
Emmanouil A. Platanios and Alex Smola
In arXiv (1806.01235)

NIPS **Estimating Accuracy from Unlabeled Data: A Probabilistic Logic Approach** 2017
Emmanouil A. Platanios, Hoifung Poon, Tom M. Mitchell, and Eric Horvitz
In Neural Information Processing Systems

arXiv **Active Learning amidst Logical Knowledge**
Emmanouil A. Platanios, Ashish Kapoor, and Eric Horvitz
In arXiv (1709.08850)

ICML **Estimating Accuracy from Unlabeled Data: A Bayesian Approach** 2016
Emmanouil A. Platanios, Avinava Dubey, and Tom M. Mitchell
In International Conference in Machine Learning

CMU **Estimating Accuracy from Unlabeled Data** 2015
Emmanouil A. Platanios
Master's Thesis at Carnegie Mellon University

AAAI **Never-Ending Learning**
Tom M. Mitchell, William Cohen, Estevam Hruschka, Partha Talukdar, Justin Betteridge, Andrew Carlson, Bhavana Dalvi, Matt Gardner, Bryan Kisiel, Jayant Krishnamurthy, Ni Lao, Kathryn Mazaitis, Tahir Mohammad, Ndapa Nakashole, **Emmanouil A. Platanios**, Alan Ritter, Mehdi Samadi, Burr Settles, Richard Wang, Derry Wijaya, Abhinav Gupta, Xinlei Chen, Abulhair Saparov, Malcolm Greaves, and Max Welling
In AAAI Conference on Artificial Intelligence

UAI **Estimating Accuracy from Unlabeled Data** 2014
Emmanouil A. Platanios, Avrim Blum, and Tom M. Mitchell
In Uncertainty in Artificial Intelligence

TPAMI **A Mixture Gaussian Process Conditional Heteroscedasticity Model with Power-Law Nature**
Emmanouil A. Platanios and Sotirios P. Chatzis
In IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 36(5), pp. 888-900

NIPS **Nonparametric Mixtures of Multi-Output Heteroscedastic Gaussian Processes for Volatility Modeling** 2012
Emmanouil A. Platanios and Sotirios P. Chatzis
In the "Modern Nonparametric Methods in Machine Learning" Neural Information Processing Systems workshop

HONORS AND AWARDS

2017 – 2nd place in the CMU NeuroHackathon
2016-17 – **CMU Presidential Fellowship**
2010-13 – **Sir Bruce White prize in engineering** for the best M.Eng. thesis at Imperial College London
– **Dean's List** at Imperial College London, for exceptional academic performance (all four years)
2010 – Nomination for the RAE (Royal Academy of Engineering) presentation skills award
– "Roll of Honor" of the Electrical and Electronic Engineering department of Imperial College London, for the best software design project in the year
2009 – Congratulatory diploma for my work on "Project Protasis – Home Automation" by **UNESCO**
– **Honorary plaque** by the **Minister of Education and Religious Affairs** for honoring my country internationally
2007-08 – **Full scholarship** (of about €12,000) by "Geitonas School", for honoring my school internationally
– Had a **computer science laboratory named after me** in "Geitonas School", for honoring my school internationally
– Awarded €1,000 by the **President of the Greek Parliament**, for honoring my country internationally
– **Honorary plaque** by the Mayor of my city, Vari, in Greece, for honoring my country internationally
– Represented Greece in the **Microsoft Imagine Cup 2008 Worldwide Finals**, in Paris, France
– 1st place in the Microsoft Imagine Cup 2008 Greek Finals with "Project Protasis - Home Automation", competing against teams from universities, at age of only 16 and having worked without a team or a mentor (also won the 2nd place in the Microsoft Imagine Cup 2009 Greek Finals with "Project Protasis - Forest Protection")
2007 – **Certificate of Excellence** for the school year 2006-07 from the Greek Ministry of Education and Religious Affairs
– 3rd place (bronze medal) in the **Greek Mathematics Olympiad**, organized by the Hellenic Mathematical Society
2003-07 – **11 scholarships** and competitions in the fields of mathematics, sciences and computer science

TEACHING EXPERIENCE

2018 **Teaching Assistant for a graduate-level course on never-ending learning at Carnegie Mellon University** USA
- Class: 10-812 Architectures for Never-Ending Learning
- Taught by **Prof. Tom Mitchell**
- Gave some lectures and helped with organization of the class
- Mentored several groups of students working on class projects

2014, 16 **Teaching Assistant for a graduate-level machine learning course at Carnegie Mellon University** USA
- Class: 10-701/15-781 Introduction to Machine Learning
- Did this for two semesters:
  - Taught by **Prof. Geoff Gordon** and **Prof. Aarti Singh** in 2014
  - Taught by **Prof. Tom Mitchell** in 2016
- Gave some lectures and some recitation lectures
- Mentored several groups of students working on class projects
- Wrote and graded homework assignments and exams

SERVICES

- Program Committees: IEEE-TPAMI (2017), NIPS (2018), EMNLP (2018), PLOS-ONE (2018), NIPS-AKBC (2016)
- Conference Workshops Organized:
  - 2018: NIPS Never-Ending Learning
  - 2017, 18: NIPS Learning with Limited Labeled Data
- University Committees:
  - 2017-18: Speaking skills committee for the CMU Machine Learning Department
  - 2016-18: Education review committee (ERC) for the CMU Machine Learning Department
  - 2014-15: Social committee for the CMU Machine Learning Department
- Community Service:
  - 2009: Volunteer at the Lavrion refugee center, in Athens, Greece
  - 2008: Reforestation of mountainside in Rafina, Greece
  - 2008: Volunteer for the International Baccalaureate Organization (IBO) training workshop
  - 2008: 13th Annual Underwater and Beach Cleanup in Athens, Greece

- 2008: Helped organize the "Christmas Bazaar" (fund raiser project)
- 2008: Helped organize the "Love Feast" (celebrating family values and fund raising for the victims of forest fires in Greece)
- 2007: Reforestation in Mani, Greece
- 2007: Volunteer at the "AQUA GALA" event for physically challenged children, for the "Hellenic Society for Disabled Children"

MAJOR TALKS

2014-17 **Estimating Accuracy from Unlabeled Data** USA

- Neural Information Processing Systems (**NIPS**) conference
- International Conference in Machine Learning (**ICML**) conference
- Uncertainty in Artificial Intelligence (**UAI**) conference
- AI Lunch at Stanford University
- ML Lunch at Carnegie Mellon University

2012 **Nonparametric Mixtures of Multi-Output Heteroscedastic Gaussian Processes** USA

- "Nonparametric Methods in Machine Learning" workshop at **NIPS**

2009 **Project Protasis – Forest Protection** Greece

- **Microsoft Hellas Headquarters**
- **Ministry of Transportation** of the Greek government (the Ministry later funded a pilot program)

2008 **Project Protasis – Home Automation** Greece, France

- **Microsoft Hellas Headquarters**
- **Louvre Museum** in Paris, France, as part of Imagine Cup
- UNESCO International Conference on Climate Change and Challenges for the Future Generations
- **Organization of School Buildings** of the Greek government (later received funding for a pilot program from the Ministry of Education and Religious Affairs)
- 73rd Thessaloniki International Fair
- Generation Next 0-18 fair, in Athens
- 4th International Conference on Information and Communication Technologies in Bio and Earth Sciences (HAICTA 2008), in Athens

SOFTWARE DEVELOPMENT SKILLS

- GitHub: `https://github.com/eaplatanios`
- High Level Programming Languages: Scala, Java, C#, C, C++, Python, Pascal, Prolog, MATLAB, Mathematica, JavaScript
- Low Level Programming Languages: Intel 80x86 Assembly, ARM Assembly, AVR Assembly
- Programming Environments (IDEs): IntelliJ IDEA, Visual Studio, MATLAB, Eclipse, NetBeans, Mathematica, SWI-Prolog IDE
- Database Systems: PostgreSQL, MS SQL Server, MySQL

OTHER INTERESTS

- Sports: Tennis, Squash, Winter Skiing, Basketball, Sailing, and Windsurfing
- Hobbies: Traveling, Philosophy, and Politics (I also really want to learn to play the Guitar)