Vasileios Gkolemis

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Education

Harokopio University of Athens — Athens, Greece
PhD candidate in Explainable Machine Learning (XAI) — *Mar. 2022 –*
Supervisors: Prof. Christos Diou, Eirini Ntoutsi, Theodore Dalamagas

University of Edinburgh — Edinburgh, Scotland, UK
MSc Operational Research with Data Science - with Distinction 78/100 — *Sep. 2019 – Oct. 2020*
Dissertation: Robust Optimization Monte Carlo for Likelihood-Free Inference
Supervisor: Michael Gutmann

University of the Basque Country — Vitoria-Gasteiz, Spain
Erasmus in "Escuela Universitaria de Ingeneria" — *Jan. 2016 – Jun. 2016*

Aristotle University of Thessaloniki — Thessaloniki, Greece
Diploma in Electrical and Computer Engineering - 7.56/10 — *Sep. 2011 – Oct. 2017*
Dissertation: Stereoscopic vision using artificial neural networks
Supervisor: Anastasios Delopoulos

Experience

Research Assistant at ATHENA Research and Innovation Center — Athens, Greece
Research Projects: XMANAI, i4metal — *Nov. 2020 –*

Research Assistant at Multimedia Understanding Group — Thessaloniki, Greece
Research Projects: BigO, i-prognosis — *Jan. 2018 – Aug. 2019*

Publications

An Extendable Python Implementation of Robust Optimisation Monte Carlo

1. *Journal of Statistical Software (JSS)*
   Vasilis Gkolemis, *Michael Gutmann, Henri Pesonen*

RHALE: Robust and heterogeneity-aware accumulated local effects

2. *European Conference in AI (ECAI), Sep. 2023, Krakow, Poland*
   Vasilis Gkolemis, *Theodore Dalamagas, Eirini Ntoutsi, Christos Diou*

Regionally Additive Models: Explainable-by-design models minimizing feature interactions

3. *European Conference in Machine Learning (ECML), Sep. 2023, Turin, Italy*
   Vasilis Gkolemis, *Anargiros Tzerefos, Theodore Dalamagas, Eirini Ntoutsi, Christos Diou*

DALE: Differential Accumulated Local Effects for efficient and accurate global explanations

4. *Asian Conference in Machine Learning (ACML), Dec. 2022, Hyderabad, India*
   Vasilis Gkolemis, *Theodore Dalamagas, Christos Diou*

Selected Talks

Regionally Additive Models
LMU University - IML-XAI group (Nov. 2023)

Overview of Global Explainability Methods
"NoBIAS – Artificial Intelligence without Bias" monthly colloquium series (Mar. 2023)

Feature Effect Methods and DALE
FUB Studying Group (Mar. 2023)

Teaching

Teaching Assistant at the MSc program of Harokopio University — Athens, Greece
Courses: Artificial Intelligence and Internet of Things — *Feb. 2023 – Jun. 2023*

Thesis co-supervisor at Harokopio University — Athens, Greece
Topics include: Explainability, Medical Imaging — *Sep. 2022 –*

Professional Service

Organizer - Program Committee

- **Workshop: Explainability meets uncertainty** @ ECML-PKDD 2023 Sept. 2023 (organizer)

Reviewer

- **Data Mining and Knowledge Discovery**
- **The Journal of Artificial Intelligence (AIJ)**
- **International Journal on Artificial Intelligence Tools (IJAIT)**

Workshops/Courses (as a student)

Summer Schools

- **PAISS 2021** Artificial Intelligence Summer School
- **Fairness in AI** First Winter School on Fairness in AI

Coursera Online Courses

- **Deep Learning Specialization** (i) Structuring Machine Learning Projects, (ii) Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, (iii) Neural Networks and Deep Learning
- **TensorFlow Developer Professional Certificate** (i) Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning
- **Machine Learning Engineering for Production** (i) Introduction to Machine Learning in production

Knowledge - Technical Skills

Background knowledge:

- **Machine Learning** Bayesian Modeling, Likelihood-free Inference, Probabilistic Graphical Models, Gaussian Processes
- **Deep Learning** CNN (expertise in Computer Vision applications), Graph Deep Learning
- **Optimization** Linear (Simplex, Interior Points), Non-Linear (First/Second Order Methods), Bayesian Optimization

Machine Learning Skills:

- **Deep Learning** PyTorch, Tensorflow, Keras, JAX
- **Probabilistic Modeling** Pyro, GPyTorch, PyMC3, ELFI
- **Data Science** Hadoop, Spark
- **Scientific Computing Libraries** Numpy, Scipy, Pandas, MatplotLib, openCV, Scikit-learn

IT Skills:

- **Programming languages** Python, C, Java, R, Matlab, Scala
- **DevOps** Docker
- **Parallel Programming** CUDA, Pthreads
- **Database Development** MongoDB, Cassandra, MySQL
- **Operating Systems** Linux
- **Other skills** Git, Github, LaTex

Foreign Languages

- **English** Proficient User • C1 • IELTS: 7.5/10 Band Score
- **Spanish** Independent User • B2 • Delle
- **French** Basic User • A2 • Delf

About me

I am a 2nd year PhD candidate (2022-) in Explainable AI under the supervision of Prof. Christos Diou, Eirini Ntoutsi and Theodore Dalamagas. At the same time, I work as a Research Associate at ATHENA RC. Prior, I completed my MSc at the University of Edinburgh (2019-2021) and obtained 5-year Diploma from Aristotle University of Thessaloniki (2011-2017).
I do research in Explainable AI I and in particular on creating (a) novel explainable-by-design models and/or (b) novel explainability techniques for black-box models. I also have a special interest for probalistic models, where I explore and explain sources of the uncertainty.
Beyond my research background, I often work in captivating industrial projects, where I deliver Deep Learning solutions for addressing challenges in NLP and Computer Vision problems. Finally, I actively contribute to some open-source projects, like ELFI.