

Dr. Georgios Gr. Feretzakis

Adjunct faculty & Postdoc Researcher,
School of Science & Technology,
Hellenic Open University, Patras, Greece

Georgios.feretzakis@ac.eap.gr

[Scopus](#), [dblp](#), [PubMed](#), [Google Scholar](#), [arXiv](#)



Georgios Feretzakis is a researcher in the field of machine learning applications in healthcare and privacy-preserving on decision trees. He holds a Bachelor's degree in Mathematics, a Master's degree in Biostatistics, a Master's degree in Information Systems, and a Ph.D. in Knowledge Hiding in Decision Trees. He is a Postdoctoral research fellow at Hellenic Open University, School of Science and Technology. Moreover, he is an Adjunct Professor in the post-graduate program “Data Science and Machine Learning” at the Hellenic Open University. His current research and publications focus on applications of Machine learning techniques in the medical domain.

JOURNAL ARTICLES

- A1. **Feretzakis, G.; Kalles, D.; Verykios, V.S. On Using Linear Diophantine Equations for in-Parallel Hiding of Decision Tree Rules.** Entropy 2019, 21, 66, doi:10.3390/e21010066.
- A2. **Feretzakis, G.; Kalles, D.; Verykios, V.S. Using Minimum Local Distortion to Hide Decision Tree Rules.** Entropy 2019, 21, 334, doi: 10.3390/e21040334
- A3. **Feretzakis, G., Evangelos Loupelis, Aikaterini Sakagianni, Nikoletta Skarmoutsou, Sophia Michelidou, Aikaterini Velentza, Maria Martsoukou, Konstantinos Valakis, Stavroula Petropoulou, and Emmanouil Koutalas (2019). A 2-Year Single-Centre Audit on Antibiotic Resistance of Pseudomonas aeruginosa, Acinetobacter baumannii and Klebsiella pneumoniae Strains from an Intensive Care Unit and Other Wards in a General Public Hospital in Greece.** Antibiotics, 8(2), 62. doi: 10.3390/antibiotics8020062

- A4. Feretzakis, G.; Loupelis, E.; Sakagianni, A.; Kalles, D.; Martsoukou, M.; Lada, M.; Skarmoutsou, N.; Christopoulos, C.; Valakis, K.; Velentza, A.; Petropoulou, S.; Michelidou, S.; Alexiou, K. Using Machine Learning Techniques to Aid Empirical Antibiotic Therapy Decisions in the Intensive Care Unit of a General Hospital in Greece. *Antibiotics* 2020, 9, 50.
- A5. Feretzakis, G.; Kalles, D.; Verykios, V.S., Knowledge Hiding in Decision Trees for Learning Analytics Applications, Advances in Core Computer Science-Based Technologies, Papers in Honor of Professor Nikolaos Alexandris, Springer ISBN 978-3-030-41195-4
- A6. Tzelves L, Chatzikrachtis N, Lazarou L, Mourmouris P, Pinitas A, Tsirkas K, Petropoulos O, Berdempes M, Feretzakis G, Glykas I, Fragkoulis C, Varkarakis I, Skolarikos A. Fragility index of urological literature regarding medical expulsive treatment. *World J Urol.* 2021 May 12. doi: 10.1007/s00345-021-03725-2. Epub ahead of print. PMID: 33978811.
- A7. Georgios Feretzakis, Aikaterini Sakagianni, Evangelos Loupelis, Dimitris Kalles, Nikoletta Skarmoutsou, Maria Martsoukou, Constantinos Christopoulos , Malvina Lada, Stavroula Petropoulou, Aikaterini Velentza, Sophia Michelidou, Rea Chatzikyriakou, Evangelos Dimitrellos. Machine Learning for Antibiotic Resistance Prediction: A Prototype Using Off-the-Shelf Techniques and Entry-Level Data to Guide Empiric Antimicrobial Therapy, *Healthcare Informatics Research* 2021;27(3):214-221. <https://doi.org/10.4258/hir.2021.27.3.214>
- A8. Mourmouris, P., Tzelves, L., Feretzakis, G., Kalles, D., Manolitsis, I., Berdempes, M., Varkarakis, I., & Skolarikos, A. (2021). The use and applicability of machine learning algorithms in predicting the surgical outcome for patients with benign prostatic enlargement. Which model to use?. *Archivio Italiano Di Urologia E Andrologia*, 93(4), 418-424. <https://doi.org/10.4081/aiua.2021.4.418>
- A9. Panteris, V., Karantanos, P., Vasilakis, N., Vgenopoulou, S., Lymperopoulou, G., Feretzakis, G., Dalainas, I., Kouroumalis, E."New considerations for colorectal cancer screening based on the demographic profile of colorectal cancer in a Greek population". *Molecular and Clinical Oncology* 16, no. 3 (2022): 57. <https://doi.org/10.3892/mco.2022.2490>
- A10. Georgios Feretzakis, George Karlis, Evangelos Loupelis, Dimitris Kalles, Rea Chatzikyriakou, Nikolaos Trakas, Eugenia Karakou, Aikaterini Sakagianni, Lazaros Tzelves, Stavroula Petropoulou1, Aikaterini Tika, Ilias Dalainas, Vasileios Kaldis, Using Machine Learning Techniques to Predict Hospital Admission at the

Emergency Department, JCCM 2022, Vol. 8, Issue 2, Volume 8, JCCM 2022, April 7, 2022.

- A11. Tzelves L, Lazarou L, **Feretzakis G**, Kalles D, Mourmouris P, Loupelis E, Basourakos S, Berdempes M, Manolitsis I, Mitsogiannis I, Skolarikos A, Varkarakis I. Using machine learning techniques to predict antimicrobial resistance in stone disease patients. *World J Urol*. 2022 May 26. doi: 10.1007/s00345-022-04043-x. PMID: 35616713. (Lazaros Tzelves, Lazaros Lazarou and **Georgios Feretzakis** contributed equally as first authors)

REFERRED CONFERENCE PROCEEDINGS ARTICLES

- B1. Kalles, D.; Verykios, V.S.; **Feretzakis, G.**; Papagelis, A. **Data set operations to hide decision tree rules**. In Proceedings of the Twenty-second European Conference on Artificial Intelligence, Hague, The Netherlands, 29 August–2 September 2016.
- B2. Kalles, D.; Verykios, V.; **Feretzakis, G.**; Papagelis, A. **Data set operations to hide decision tree rules**. In Proceedings of the 1St International Workshop on AI for Privacy and Security—Praise ‘16, Hague, The Netherlands, 29–30 August, 2016.
- B3. **Feretzakis, G.**; Kalles, D.; Verykios, V. **On Using Linear Diophantine Equations for Efficient Hiding of Decision Tree Rules**. In Proceedings of the 10th Hellenic Conference on Artificial Intelligence—SETN ‘18, Patras, Greece, 9–12 July 2018.
- B4. **Feretzakis, G.**; Kalles, D.; Verykios, V.S. **Hiding Decision Tree Rules in Medical Data: A Case Study**, Studies in Health Technology and Informatics, Volume 262: Health Informatics Vision: From Data via Information to Knowledge, 368 - 371, doi: 10.3233/SHTI190095
- B5. **Feretzakis, G.**; Kalles, D.; Verykios, V.S. **Local Distortion Hiding in Financial Technology application: a case study with a benchmark data set**, 2019 10th International Conference on Information, Intelligence, Systems and Applications (IISA)doi: 10.1109/IISA.2019.8900733
- B6. **Feretzakis, G.**, Loupelis E, Petropoulou S, Christopoulos C, Lada M, Martsoukou M, Skarmoutsou N, Sakagianni K, Michelidou S, Velentza K, Valakis K, Koutalas E (2019). **Using Microbiological Data Analysis to Tackle Antibiotic Resistance of Klebsiella Pneumoniae**. Volume 262: Health Informatics Vision: From Data via Information to Knowledge.p 180 – 18, doi: 10.3233/SHTI190047

- B7. Sakagianni, A., Feretzakis, G., Kalles, D., Koufopoulos, C., & Kaldis, V. (2020). **Setting up an Easy-to-Use Machine Learning Pipeline for Medical Decision Support: A Case Study for COVID-19 Diagnosis Based on Deep Learning with CT Scans.** Studies in health technology and informatics, 272, 13–16. <https://doi.org/10.3233/SHTI200481>
- B8. Feretzakis, G., Loupelis, E., Sakagianni, A., Kalles, D., Lada, M., Christopoulos, C., Dimitrellos, E., Martsoukou, M., Skarmoutsou, N., Petropoulou, S., Alexiou, K., Velentza, A., Michelidou, S., & Valakis, K. (2020). **Using Machine Learning Algorithms to Predict Antimicrobial Resistance and Assist Empirical Treatment.** Studies in health technology and informatics, 272, 75–78. <https://doi.org/10.3233/SHTI200497>
- B9. Feretzakis, G., Kalles, D., & Verykios, V. S. (2020). **Local Distortion Hiding Algorithm in Medical Data: A Case Study Using CART.** Studies in health technology and informatics, 272, 99–102. <https://doi.org/10.3233/SHTI200503>
- B10. Georgios Feretzakis, Konstantinos Mitropoulos, Dimitris Kalles, and Vassilios S. Verykios. 2020. **Local Distortion Hiding (LDH) Algorithm: a Java-based prototype.** In 11th Hellenic Conference on Artificial Intelligence (SETN 2020). Association for Computing Machinery, New York, NY, USA, 144–149. DOI:<https://doi.org/10.1145/3411408.3411419>
- B11. Feretzakis G, Karlis G, Tsekouras K, Orfanos S, Loupelis E, Petropoulou S, Mantzouranis K, Tsafaridou M, Chatzikyriakou R, Sofianou A, Zafeiriadou P, Tika A, Dalainas I, Kaldis V. **Analyzing Acute Care Surgery Patient Flow in the Emergency Department During COVID-19 Pandemic.** Stud Health Technol Inform. 2021 May 27;281:540-544. doi: 10.3233/SHTI210229. PMID: 34042634.
- B12. Feretzakis G, Sakagianni A, Loupelis E, Kalles D, Martsoukou M, Skarmoutsou N, Christopoulos C, Lada M, Velentza A, Petropoulou S, Michelidou S, Kaldis V, Chatzikyriakou R, Dalainas I, Dimitrellos E. **Using Machine Learning to Predict Antimicrobial Resistance of *Acinetobacter baumannii*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* Strains.** Stud Health Technol Inform. 2021 May 27;281:43-47. doi: 10.3233/SHTI210117. PMID: 34042702.
- B13. Feretzakis G, Sakagianni A, Loupelis E, Karlis G, Kalles D, Tzelves L, Chatzikyriakou R, Trakas N, Petropoulou S, Tika A, Rakopoulou Z, Dalainas I, Kaldis V. **Predicting Hospital Admission for Emergency Department Patients: A Machine Learning Approach.** Stud Health Technol Inform. 2022 Jan 14;289:297-300. doi: 10.3233/SHTI210918. PMID: 35062151.

- B14. Sakagianni A, **Feretzakis G**, Karlis G, Loupelis E, Tzelves L, Chatzikyriakou R, Trakas N, Karakou E, Petropoulou S, Tika A, Rakopoulou Z, Dalainas I, Kaldis V. Admission and Discharge Following Ambulance Transport to the Emergency Department. *Stud Health Technol Inform.* 2022 Jan 14;289:418-421. doi: 10.3233/SHTI210947. PMID: 35062180. (**Sakagianni A, Feretzakis G** contributed equally as first authors)
- B15. **Feretzakis G**, Mitropoulos K, Kalles D, Verykios VS. Inference Control in a Diabetes Data Set Using a Java-Based Prototype of LDH Algorithm. *Stud Health Technol Inform.* 2022 Jan 14;289:414-417. doi: 10.3233/SHTI210946. PMID: 35062179.
- B16. **Feretzakis G**, Sakagianni A, Loupelis E, Kalles D, Panteris V, Tzelves L, Chatzikyriakou R, Trakas N, Kolokytha S, Batiani P, Rakopoulou Z, Tika A, Petropoulou S, Dalainas I, Kaldis V. Prediction of Hospitalization Using Machine Learning for Emergency Department Patients. *Stud Health Technol Inform.* 2022 May 25;294:145-146. doi: 10.3233/SHTI220422. PMID: 35612042.
- B17. Feretzakis G, Sakagianni A, Kalles D, Loupelis E, Tzelves L, Panteris V, Chatzikyriakou R, Trakas N, Kolokytha S, Batiani P, Rakopoulou Z, Tika A, Petropoulou S, Dalainas I, Kaldis V. Exploratory Clustering for Emergency Department Patients. *Stud Health Technol Inform.* 2022 Jun 29;295:503-506. doi: 10.3233/SHTI220775. PMID: 35773921.
- B18. **Feretzakis G**, Sakagianni A, Kalles D, Loupelis E, Panteris V, Tzelves L, Chatzikyriakou R, Trakas N, Kolokytha S, Batiani P, Rakopoulou Z, Tika A, Petropoulou S, Dalainas I, Kaldis V. Using Machine Learning for Predicting the Hospitalization of Emergency Department Patients. *Stud Health Technol Inform.* 2022 Jun 29;295:405-408. doi: 10.3233/SHTI220751. PMID: 35773897.
- B19. Manolitsis I, **Feretzakis G**, Tzelves L, Kalles D, Loupelis E, Katsimperis S, Kosmidis T, Anastasiou A, Koutsouris D, Kofopoulou S, Verykios VS, Skolarikos A, Varkarakis I. Using Association Rules in Antimicrobial Resistance in Stone Disease Patients. *Stud Health Technol Inform.* 2022 Jun 29;295:462-465. doi: 10.3233/SHTI220765. PMID: 35773911. (**Manolitsis I, Feretzakis G** contributed equally as first authors)
- B20. Sakagianni A, **Feretzakis G**, Kalles D, Loupelis E, Rakopoulou Z, Dalainas I, Fildisis G. Discovering Association Rules in Antimicrobial Resistance in Intensive

- Care Unit. Stud Health Technol Inform. 2022 Jun 29;295:430-433. doi: 10.3233/SHTI220757. PMID: 35773903.
- B21. Tzelves L, Feretzakis G, Kalles D, Manolitsis I, Katsimperis S, Bellos T, Berdempes M, Anastasiou A, Koutsouris D, Kofopoulou S, Verykios VS, Skolarikos A, Varkarakis I. Cluster Analysis Assessment in Proposing a Surgical Technique for Benign Prostatic Enlargement. Stud Health Technol Inform. 2022 Jun 29;295:466-469. doi: 10.3233/SHTI220766. PMID: 35773912. (Tzelves L, Feretzakis G contributed equally as first authors)

REFERRED CONFERENCE PROCEEDINGS ABSTRACTS

- C1. A Sakagianni; **G Feretzakis**; E Loupelis; D Kalles; M Lada; M Martsoukou; C Christopoulos ; N Skarmoutsou; S Michelidou; K Valakis. P556 Streamlining the application of machine learning techniques to ICU practices - a preliminary study. In 40th International Symposium on Intensive Care & Emergency Medicine 2020 – Part 2. Crit Care 24, 533 (2020). <https://doi.org/10.1186/s13054-020-03187-9>
- C2. A. Sakagianni; O. Kampouropoulou; E. Kourtelesi; N. Skarmoutsou; **G. Feretzakis**; K. Valakis, Prevalence of intestinal colonization with Carbapenem resistant Gram-negative bacteria (CRB) on admission to intensive care unit and incidence of subsequent CRB infections, Intensive Care Medicine Experimental 2020, 8(2): 000305
<https://doi.org/10.1186/s40635-020-00354-8>
- C3. L. Tzelves, **G. Feretzakis**, E. Loupelis, D. Kalles, P. Mourmouris, I. Manolitsis, A. Pinitas, M. Zerva, N. Chatzikractis, K. Tsirkas, M. Berdempes, M. Martsoukou, N. Skarmoutsou, E. Milona, D. Adamou, A. Velentza, S. Petropoulou, I. Mitsogiannis, A. Papatsoris, C. Deliveliotis, I. Varkarakis, A. Skolarikos, P0152 - Using machine learning models to predict antimicrobial resistance and assist urologists in decision-making regarding empirical antibiotic treatment, European Urology, Volume 79, Supplement 1, 2021, Page S220, ISSN 0302-2838,
[https://doi.org/10.1016/S0302-2838\(21\)00543-1](https://doi.org/10.1016/S0302-2838(21)00543-1).
- C4. Tzelves, L., Mourmouris, P., **Feretzakis, G.**, Kalles, D., Manolitsis, I., Zerva, M., Pinitas, A., Tsirkas, K., Deverakis, T., Mitsogiannis, I., Varkarakis, I., and Varkarakis, I. (2021). MP09-19 use and applicability of machine learning algorithms

in PREDICTING surgical outcome for patients with benign Prostatic Enlargement. which model to use? Journal of Urology, 206(Supplement 3).
<https://doi.org/10.1097/ju.0000000000001982.19>

C5. A Sakagianni, G Feretzakis, G Karlis, E Loupelis, D Kalles, L Tzelves, R Chatzikyriakou, N Trakas, V Kaldis, Implementation of machine learning algorithm in the emergency department for the prediction of hospital admission, 40th INTERNATIONAL SYMPOSIUM ON INTENSIVE CARE & EMERGENCY MEDICINE, Critical Care 2021, 25(Suppl 1): P085, <https://ccforum.biomedcentral.com/articles/10.1186/s13054-021-03769-1#Sec360>

C6. V. Tsiora, N. Smailis, K. Sgouros, **G. Feretzakis**, E. Refene, K. Tilidou , I. Panagou, A. Stylianakis ,V. Kaldis. Evaluating Trauma Care: Initial assessment of Blood products consumption in Resuscitation Bay of a Tertiary Trauma Hospital under COVID-19 pandemic era;A single center experience, ESICM LIVES Forum 2022, Athens, Greece, 23-25 June 2022 (<https://esicmforum2022.process.y-congress.com/ScientificProcess/schedule/>)

C7. Pagona Gourna, Georgios Galatas, Efthymia Pappa, Asimina Romiou, Ifigeneia Kiki, Lemonia Panagiotou, Dimitrios Papavasileiou, **Georgios Feretzakis**, Constantinos Christopoulos.THE PROGNOSTIC VALUE OF LOW SERUM THYROTROPIN LEVELS IN COVID-19 PATIENTS: STATISTICAL AND MACHINE LEARNING APPROACHES (20th European Congress of Internal Medicine / 9-11 June 2022, Malaga, Spain) Abstract Book of the 20th European Conference of Internal Medicine https://doi.org/10.12890/2022_V9Sup1

C8. V. Tsiora ; N. Smailis; K. Sgouros; **G. Feretzakis**; E. Refene; K. Tilidou; I. Panagou; A. Stylianakis ;V. Kaldis. Evaluating Trauma Care: Initial assessment of Blood products consumption in Resuscitation Bay of a Tertiary Trauma Hospital under COVID-19 pandemic era;A single center experience (LIVES FORUM/ MAJOR TRAUMA & BRAIN INJURY: FROM ASSESSMENT TO TREATMENT / 23-25 June 2022, Athens, Greece)