

International Center for Biosaline Agriculture (ICBA), Dubai, UAE

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Anestis Gkanogiannis, Ph.D.

Summary and Research Interests

Award winning Researcher in the fields of Artificial Intelligence, Machine Learning and Bioinformatics. With strong analytical skills and problem solving capabilities. Expert in algorithm construction and prototype software development. With ability to learn fast, fill knowledge gaps and adapt to new technologies and challenges. With extensive experience and focus on NGS data analysis/integration/visualization, Computational Biology, Comparative Genomics, Genomic Selection, Artificial Intelligence, Machine Learning, Deep Learning, Big Data Mining, Classification, Clustering, Algorithms and Data Structures, and HPC cluster and systems management. I am proficient in programming languages such as C++, Java, R, and Android development, as well as Nextflow pipeline development and Docker/Singularity container development.

Professional Experience

Current Position

Dec 2022 **Bioinformatics Scientist**, *ICBA*, International Center for Biosaline Agriculture, Dubai, United Arab Emirates

Area of NGS data analysis (RNA-Seq, WGS, etc.),

Research: De novo Reference Genome assembly, Reference Genome annotation, Population Genomics

Previous Position

Apr 2022 – **Bioinformatician**, *CRG*, Gene Regulation, Stem Cells and Cancer,

Nov 2022 Barcelona, Catalonia, Spain

Area of Cancer metabolism, NGS data analysis (RNA-Seq, ATAC-Seq, Nanopore, WGS, SLAM-Seq, etc.),

Research: Nextflow pipelines development, Bioconductor R packages development, CRISPR gene screening, Computational Biology

Previous Position

Jan 2017 – **Research Scientist / Bioinformatics Head**, *CIAT/CGIAR*, Agrobiodiversity Research Area,

Mar 2021 Cali, Valle de Cauca, Colombia

Area of Plant Genomics/Genetics/Bioinformatics (Cassava, Rice, Bean, Forages),

Research: NGS data analysis, Computational Biology, Population Genomics, GWAS, Genomic Selection, Machine Learning, Artificial Intelligence, Big Data

Previous Position

Jun 2015 – **Post-Doctorate**, *CIRAD/BIOS/AGAP*, Intégration de données (Equipe ID),

Dec 2016 Montpellier, Languedoc-Roussillon-Midi-Pyrénées, France

Area of Computational Biology, Software Analyst/Developer, Web Developer

Research: Bioinformatics, NGS DNA sequencing, Machine Learning, Big Data Mining, Genomics

Previous Position

Jun 2013 – **Post-Doctorate**, *CEA/Genoscope*, Laboratoire de Génomique et Biochimie du Métabolisme (LGBM),

Jun 2015 Evry, Île-de-France, France

Area of Machine Learning and Computational Biology, Software Analyst/Developer: MetaTarget

Research: Bioinformatics, NGS DNA sequencing, Machine Learning, Clustering, Big Data Mining, Classification, Text Mining

Previous Position

Oct 2011 – **Post-Doctorate**, *University of New Brunswick*, Faculty of Computer Science,
 Mar 2013 Fredericton, New Brunswick, Canada

Area of Research: Machine Learning, Artificial Intelligence, Software Analyst/Developer and Project Manager,
 I-AID: Intelligent Analysis of Information and Dissemination
 Machine Learning, Big Data Mining, Information Retrieval, Text Classification

Skill matrix



	Level	Skill	Since	Comment
Sciences	■■■■■	Bioinformatics	2013	<i>Computational Biology, NGS data processing (management, analysis, interpretation, visualization), CRISPR gene screening, Population Genomics, Developing genomics workflows (Nextflow, WDL), Metagenomics, Plant Genomics</i>
	■■■■■	Computer Science and Engineering	1998	<i>Artificial Intelligence, Machine Learning, Deep Learning, Big Data Mining, Algorithms and Data Structures, Classification, Clustering, Text Processing, Text Indexing, Text Retrieval</i>
	■■■■■	Physics	1998	<i>Quantum Mechanics, Electrodynamics, Thermodynamics, Classical Mechanics, Electromagnetism, Optoelectronics, Lasers, Superconductivity</i>
	■■■■■	Mathematics	1998	<i>Applied Mathematics, Real and Complex Analysis, Linear Algebra, Differential Geometry, Graph Theory</i>
Computer Programming	■■■■■	Java/Groovy	1998	<i>Experience with Enterprise and Micro Editions, Java SE 6,8,11, JNI, RMI, JSP, Servlets, JSF, etc. Experience with Android Development (SDKs 8-11).</i>
	■■■■■	C/C++/Fortran	1998	<i>The languages (along with Java) that I was initially trained and stuck with.</i>
	■■■■■	UNIX shell scripting	1998	<i>Mainly bash.</i>
	■■■■■	R/Rstudio	2010	<i>Bioinformatics and Data Science applications. Bioconductor packages.</i>
	■■■■■	Python	2019	<i>For programming Arduino and Raspberry pi prototypes.</i>
	■■■■■	XML/HTML/CSS/PHP/SQL	2005	<i>Frontend development</i>
Operating Systems	■■■■■	Matlab/Mathematica	2000	<i>Linear algebra, Fourier transforms, nonlinear numerical methods, polynomials, statistics, N-dimensional filters, visualization</i>
	■■■■■	Linux/UNIX	1996	<i>RedHat, Ubuntu, Debian, CentOS, Archlinux, FreeBSD, MacOS, root level.</i>
	■■■■■	Windows	1996	<i>Windows 95 until 11, administrator level.</i>
Software Tools	■■■■■	Networking	1998	<i>UDP, TCP, ARP, DNS, Dynamic routing, Services (Apache, SQL, MediaWiki, POP, IMAP, SMTP, daemon design), etc. MQTT for IoT messaging.</i>
	■■■■■	Git, Eclipse, NetBeans, Android Studio, L ^A T _E X, Lucene	2000	
Hardware and Systems	■■■■■	Standalone or networked computing systems, HPC	1998	<i>Setting up, managing and troubleshooting systems. Utilizing HPC clusters with Slurm, SGE, etc.</i>

Analog and Digital Electronics ■■■■ ■ Arduino and Raspberry pi prototyping 2000 *Bipolar and FET implementations of continuous and switched amplifiers, modulators, converters, and filters. Sensors and IoT implementations.*

Education

Postgraduate

Dec 2005 – Jun 2011 **Ph.D., CS Department**, *Athens University of Economics and Business*, Athens, Greece
Thesis: *Information Retrieval and Text Classification. Linear Classifiers and Modified Perceptron.*
Supervisor: Professor Theodore Z. Kalamboukis
Area of Study: Machine Learning, Artificial Intelligence, Information Retrieval, Text Classification

Oct 2003 – Jun 2005 **M.Sc., CS Department**, *Athens University of Economics and Business*, Athens, Greece
Thesis: *Text Classification with k-NN.*
Supervisor: Professor Theodore Z. Kalamboukis
Area of Study: Machine Learning, Artificial Intelligence, Information Retrieval, Text Classification

Undergraduate

Oct 1998 – Jun 2003 **B.Sc., Physics Department**, *University of Crete*, Heraklion, Greece
Area of Study: Lasers specialization (emphasis on laser-superconductor interaction)
Extra: Computer programming and algorithms

Workshops

22–26 July 2019 **Artificial Intelligence and Machine Learning Workshop with Genomic Selection Use Case, Excellence in Breeding (EiB)**, Montpellier, France

8–12 October 2018 **Transforming Breeding Through Integrated Data Management and Analysis**, *The Boyce Thompson Institute (BTI)*, Cornell University, Ithaca, NY, USA

4–8 June 2018 **Practical Haplotype Graph (PHG)**, *Buckler Lab*, Cornell University, Ithaca, NY, USA

5–8 February 2018 **Bioinformatics Hackathon, Excellence in Breeding (EiB)**, International Rice Research Institute (IRRI), Los Banos, Philippines

6–17 March 2017 **Quantitative Methods In Plant Breeding**, The National Institute of Agricultural Botany (NIAB), Cambridge, UK

Awards

2020 **Zindi and CGIAR Wheat Growth Stage Challenge by CGIAR Platform for Big Data in Agriculture**
First Place Winner (as CGIAR participant)

2018 **Syngenta Crop Challenge in Analytics**
First Place Winner

2008 **Discovery Challenge, European Conference on Machine Learning (ECML)**
First prize, Spam Detection Task

2005–2008 **Greek General Secretariat for Research and Technology**
PENED Scholarship

1995 **Greek Mathematic Society**
Regional Award

Languages

English Professional level. Working experience since 2011

French Intermediate level. Working experience since 2013

Spanish Intermediate level. Working experience since 2016

Greek Mother tongue

Interests

Electronics, Building IoT/ML/AI prototypes with RPi/Arduino.
Technology

Movies Mystery or thriller.

Travelling Organizing and setting up road trips.

Publications

- [1] Laura Perez-Fons, Tatiana Maria Ovalle, Margit Drapal, Maria Alejandra Ospina, Anestis Gkanogiannis, Adriana Bohorquez-Chaux, Luis Augusto Becerra Lopez-Lavalle, and Paul David Fraser. Integrated genetic and metabolic characterization of Latin American cassava (*Manihot esculenta*) germplasm. *Plant Physiology*, 05 2023. kiad269.
- [2] Mauricio Peñuela, Camila Riccio-Rengifo, Jorge Finke, Camilo Rocha, Anestis Gkanogiannis, Rod A. Wing, and Mathias Lorieux. Prediction of crossover recombination using parental genomes. *PLOS ONE*, 18(2):1–21, 02 2023.
- [3] Angélica M. Jaramillo, Santiago Sierra, Paul Chavarriaga-Aguirre, Diana Katherine Castillo, Anestis Gkanogiannis, Luis Augusto Becerra López-Lavalle, Juan Pablo Arciniegas, Tianhu Sun, Li Li, Ralf Welsch, Erick Boy, and Daniel Álvarez. Characterization of cassava orange proteins and their capability to increase provitamin a carotenoids accumulation. *PLOS ONE*, 17(1):1–24, 01 2022.
- [4] Mauricio Peñuela, Jenny Johana Gallo-Franco, Jorge Finke, Camilo Rocha, Anestis Gkanogiannis, Thaura Ghneim-Herrera, and Mathias Lorieux. Methylation in the chh context allows to predict recombination in rice. *International Journal of Molecular Sciences*, 23(20), 2022.
- [5] Christopher Fragoso Mathias Lorieux, Anestis Gkanogiannis and Jean-François Rami. Noisymputer: genotype imputation in bi-parental populations for noisy low-coverage next-generation sequencing data. In *bioRxiv 658237*, 2019.
- [6] Ovalle Tatiana Becerra López-Lavalle Luis Augusto, Villafrade Rodriguez Zapata Fausto, Ruiz Manuel, Gkanogiannis Anestis, and Tohmé Joe. Capturing next-generation genome wide molecular markers in cassava helps to untangle the crop’s genetic improvement history. In *Proceedings Plant and Animal Genome XXVI Conference, 2018 PAG, San Diego*, 2018.
- [7] Szurek Boris Gkanogiannis Anestis, Dereeper Alexis, Zarate Carlos, López Camilo, Becerra López-Lavalle Luis Augusto, and Ruiz Manuel. The cassava genome hub. In *Proceedings Plant and Animal Genome XXVI Conference, 2018 PAG, San Diego*, 2018.
- [8] Ruiz Manuel Villafrade Rodriguez Zapata Fausto, Ovalle Tatiana, Gkanogiannis Anestis, and Becerra López-Lavalle Luis Augusto. Population structure of wild and cultivated plants shows hierarchical organization of cassava germplasm diversity. In *Proceedings Plant and Animal Genome XXVI Conference, 2018 PAG, San Diego*, 2018.
- [9] Gkanogiannis Anestis and Thomas Brüls. A scalable assembly-free variable selection algorithm for biomarker discovery from metagenomes. *BMC Bioinformatics*, Aug 19;17(1):311, 2016.
- [10] South Green members. The south green portal: a comprehensive resource for tropical and mediterranean crop genomics. *Current Plant Biology*, 7-8, pp.6-9, 2016.
- [11] Gkanogiannis Anestis and Kalamboukis Theodore. A perceptron-like linear supervised algorithm for text classification. In *Advanced Data Mining and Applications (ADMA), Lecture Notes in Computer Science, 2010, Volume 6440/2010, 86-97, Chongqing, China*, 2010.
- [12] Stougiannis Alexios Gkanogiannis Anestis and Kalamboukis Theodore. Ipl at clef 2010. In *CLEF working notes 2010, Padua, Italy*, 2010.
- [13] Gkanogiannis Anestis and Kalamboukis Theodore. A modified and fast perceptron learning rule and its use for tag recommendations in social bookmarking systems. In *ECML PKDD Discovery Challenge 2009 (DC09), International Workshop at the ECML/PKDD in Bled, Slovenia, September 7th, 2009*, 2009.
- [14] Gkanogiannis Anestis and Kalamboukis Theodore. An algorithm for text categorization. In *The 31st Annual International ACM SIGIR Conference, 20-24 July, Singapore*, 2008.

- [15] Gkanogiannis Anestis and Kalamboukis Theodore. A novel supervised learning algorithm and its use for spam detection in social bookmarking systems. In *Winner of ECML PKDD Discovery Challenge 2008 (DC08), task 1: Spam Detection in Social Bookmarking Systems, Adwerp, Belgium, 2008*, 2008.
- [16] Kalamboukis Theodore Kotsonis Vaggelis, Gkanogiannis Anestis and Eliakis Stelios. A greek-english cross language medical information retrieval system. In *Conference on Medical Imaging and Informatics, MIMI 2007, Beijing, 2008*.