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Anestis Gkanogiannis, Ph.D.

Summary and Research Interests

Award-winning researcher in Bioinformatics, Artificial Intelligence, and Machine Learning with strong analytical skills and expertise in algorithm development and software prototyping. Extensive experience in NGS data analysis, genome assembly/annotation, computational biology, AI/ML applications and Linux/HPC systems. Proficient in C++, Java, R, Python, Android development, expert in AI frameworks like TensorFlow and PyTorch, and modern pipeline and deployment tools like Nextflow, Docker, and Singularity. Energetic, adaptable, and skilled at tackling complex challenges with a "can-do" and results-driven approach.

Professional Experience

December 2022 - present **Bioinformatics Scientist**, *ICBA*, Dubai, United Arab Emirates

- Lead a small team on bioinformatics tasks.
- Assembled and annotated the genome of *Citrullus colocynthis* and *Salicornia bigelovii* from PacBio HiFi, Hi-C and IsoSeq data.
- Determinted the genetic diversity of a UAE collected Ghaf tree population.
- Developed AI tool for plant disease detection with TensorFlow Lite, PyTorch and YOLO.
- Managed the HPC infrastructure.
- Acquired experience in NGS analysis, Genome assembly / annotation, Population Genomics, Machine Learning, AI, Nextflow pipelines and Docker containers.

April 2022 -November 2022 **Bioinformatician**, *CRG*, Barcelona, Spain

- Analyzed and visualized RNA-Seq, ATAC-Seq, Nanopore, WGS, CRISPR gene screening and SLAM-Seq data for cancer metabolism projects.
- Developed Nextflow pipelines and Bioconductor R packages.
- Acquired experience in Cancer metabolism, Computational Biology, NGS analysis, Nextflow, Bioconductor R

April 2021 - March 2022 **Career break**, *Personal wellbeing*, Evia, Greece

January 2017 - March 2021 **Head Bioinformatics Scientist**, *CIAT-CGIAR*, Cali, Colombia

- Lead a small team on data analysis for Cassava, Rice, Bean and Forajes breeding programs.
- Determinted the domestication origin of Cassava, through genetic diversity analysis of population of cultivated and wild samples.
- Developed genetic map for white fly resistance in Cassava.
- Developed computer vision (CV) artificial intelligence (AI) model that won Zindi's 2020 Wheat growth stage Challenge.
- Developed machine learning (ML) model than won Syngenta's 2018 Crop Challenge on predicting corn hybrids performance, by using genotypic, phenotypic and climate data.
- Managed the HPC infrastructure.
- Acquired experience in Plant Genomics / Genetics / Bioinformatics, NGS analysis, Computational Biology, Population Genomics, GWAS, Genomic Selection, Machine Learning, Artificial Intelligence, Big Data

June 2015 - December 2016 **Post-Doctorate Researcher**, *CIRAD*, Montpellier, France

- Developed web portal and tools for the analysis and visualization of Cassava NGS data.
- Acquired experience in Genomics, Bioinformatics, NGS Analysis, Computational Biology, Software and Web App Development

June 2013 - May 2015 **Post-Doctorate Researcher**, *Genoscope-CEA*, Paris, France

- Developed and implemented algorithm for binning of metagenome sequences.

– Acquired experience in Bioinformatics, NGS Analysis, Computational Biology, Machine Learning, Clustering, Classification, Big Data Mining, Text Mining, Software Analysis and Development

October 2011 - March 2013 **Post-Doctorate Researcher**, *University of New Brunswick*, Fredericton, Canada

– Managed a team on the "I-AID: Intelligent Analysis of Information and Dissemination" project.

– Developed ML software for training NLP models.

– Acquired experience in Machine Learning, Artificial Intelligence, Big Data Mining, Information Retrieval, Text Classification, Project Management, Software Analysis and Development

Education

December 2005 - May 2011 **Ph.D., Computer Science**, *AUEB*, Athens, Greece

Thesis *Information Retrieval and Text Classification. Linear Classifiers and Modified Perceptron.*

Research Machine Learning, Artificial Intelligence, Information Retrieval, Text Classification

October 2003 - June 2005 **M.Sc., Computer Science**, *AUEB*, Athens, Greece

Thesis *Text Classification with k-NN.*

Research Machine Learning, Artificial Intelligence, Information Retrieval, Text Classification

October 1998 - June 2003 **B.Sc., Physics**, *University of Crete*, Heraklion, Greece

Research Lasers specialization (emphasis on laser-superconductor interaction)

Extra Computer programming and algorithms

Skills

Legend

■□□□□ basic knowledge

■■□□□ intermediate knowledge with some project experience

■■■□□ extensive project experience

■■■■□ deepened expert knowledge

■■■■■ expert / specialist

	Level	Skill	Since	Comment
Sciences	■■■■■	Bioinformatics	2013	*Computational Biology, NGS data processing (management, analysis, interpretation, visualization), Genome Assembly / Annotation, CRISPR gene screening, Population Genomics, Developing genomics workflows (Nextflow, WDL), Metagenomics, Plant Genomics*
	■■■■■	Computer Science	1998	*Artificial Intelligence, Machine Learning, Deep Learning, Big Data Mining, Algorithms and Data Structures, NLP, Classification, Clustering, Text Processing*
	■■■■□	Physics	1998	*Quantum Mechanics, Electrodynamics, Thermodynamics, Classical Mechanics, Electromagnetism, Optoelectronics, Lasers, Superconductivity*
	■■■■□	Mathematics	1998	*Applied Mathematics, Real and Complex Analysis, Linear Algebra, Differential Geometry, Graph Theory*
Computer	■■■■■	Java	1998	*Experience with Enterprise and Micro Editions, Java SE 8,11,17, JNI, RMI, JSP, Servlets, JSF. Experience with Android Development.*
	■■■■□	C / C++	1998	*Developing highly efficient tools.*
	■■■■■	UNIX shell	1998	*Bash scripting.*
	■■■■□	R / Rstudio	2010	*Bioinformatics and Data Science applications. Bioconductor packages.*
	■■■■□	Python	2019	*For developing AI models, shell scripting and programming Arduino/Raspberry pi prototypes.*
Operating Systems	■■■■■	Linux / UNIX	1996	*Ubuntu, Debian, RedHat, CentOS, FreeBSD, MacOS, root level.*
	■■■■■	Windows®	1996	*Windows 95 up to 11, Administrator level.*

Hardware Systems	Computing systems, HPC	1998	*Setting up, managing and troubleshooting systems. Utilizing HPC clusters with Slurm, SGE, etc.*
Digital Electronics	Arduino and Raspberry pi	2000	*Sensors and IoT implementations for Smart Agriculture, MQTT for IoT messaging.*

Workshops

30 Oct 2023 - 3 Nov 2023 **Genome annotation and other post-assembly workflows for the tree of life**
Biohackathon Europe, Elixir, Barcelona, Spain

22 Jul 2019 - 26 Jul 2019 **Artificial Intelligence and Machine Learning Workshop with Genomic Selection**
Excellence in Breeding (EiB), Montpellier, France

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

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

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

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

Awards

2020 **Zindi/CGIAR Wheat Growth Stage Challenge**
First Place Winner (as CGIAR participant)

– Developed computer vision artificial intelligence model to automate wheat growth stage estimation from farmer-submitted images.

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

– Participated in developing machine learning models to predict how corn hybrids will perform in untested locations, in an effort to help plant breeders improve hybrid performance predictions.

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

2005 - 2008 **Greek General Secreteriat for Research and Technology**
PENED Scholarship

1995 **Greek Mathematic Society**
Regional Award

Teaching Experience

Sep 2005 - Jul 2010 **Teaching Assistant**, *AUEB*, Athens, Greece

– Lab Instructor for Information Retrieval Systems, Spring 2008, Spring 2009, Spring 2010. Responsible for preparation and supervision of 3 hour weekly laboratory where graduate students practise on information retrieval projects.

– Lab Instructor for Information Retrieval Systems, Spring 2007, Spring 2008, Spring 2009. Responsible for preparation and supervision of 3 hour weekly laboratory where senior undergraduate students practise on information retrieval projects.

– Lab Instructor for Computer Programming with Java, Winter 2005, Spring 2007, Spring 2008. Responsible for preparation and supervision of 3 hour weekly laboratory where undergraduate students practise on Java excercises.

– Lab Instructor for Applied Statistics, Spring 2006. Responsible for preparation and supervision of 3 hour weekly laboratory for undergraduate students.

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, Technology	Building IoT/ML/AI prototypes with RPi/Arduino.
Movies	Mystery or thriller.
Travelling	Organizing and setting up road and scuba diving trips.

References

Dr. Luis Augusto Becerra Lopez-Lavalle (e-mail: a.becerra@cgiar.org)
- Chief Scientist, International Center for Biosaline Agriculture (ICBA)
- ⋆ *Dr. Becerra is my current position's manager (2022 - present) and was my previous position's manager (2017 - 2021).*

Dr. Sara Sdelci (e-mail: sara.sdelci@crg.eu)
- Group Leader, Sdelci Lab, Centre for Genomic Regulation (CRG)
- ⋆ *Dr. Sdelci was my previous position's manager (2022 - 2022).*

Dr. Manuel Ruiz (e-mail: manuel.ruiz@cirad.fr; phone: +33 4 67 61 65 29)
- Chercheur CIRAD/CIAT, CIRAD
- ⋆ *Dr. Ruiz was my previous PostDoc supervisor (2015 - 2017).*

Dr. Theodore Z. Kalamboukis (e-mail: tzk@aueb.gr; phone: +30-21-0820-3575)
- Professor, Département d'Informatique, Athens University of Economics and Business
- ⋆ *Dr. Kalamboukis was my PhD Thesis supervisor (2005 - 2011).*

Publications

[1] Srinivasan Samineni, Sridhar Gummadi, Sumitha Thushar, Dil Nawaz Khan, **Anestis Gkanogiannis**, Luis Augusto Becerra Lopez-Lavalle, and Rakesh Kumar Singh. Exploring proso millet resilience to abiotic stresses: High-yield potential in desert environments of the middle east. *Agronomy*, 15(1), 2025.

[2] Tom Brown, Kathleen Collier, Fernando Cruz, **Anestis Gkanogiannis**, Sagane Joye-Dind, Yannis Nevers, Stepan Saenko, Tyler Alioto, Anthony Bretaudeau, Michael Charleston, Phuong Duy Doan, Christoph Hahn, Thomas Harrop, Katie Herron, Fredrick Kebaso, Romane Libouban, Locedi Mansueto, Shivakumara Manu, Asime Oba, David Swarbreck, Anna Syme, Fabio Zanarello, Jean-Marc Aury, Jèssica Gómez-Garrido, and Alice Dennis. Genome annotation and other post-assembly workflows for the tree of life, 2024.

[3] **Anestis Gkanogiannis**, Hifzur Rahman, Rakesh Kumar Singh, and Augusto Becerra Lopez-Lavalle. Chromosome-level genome assembly and functional annotation of citrullus colocynthis: unlocking genetic resources for drought-resilient crop development. *Planta*, 260(6):124, 2024.

[4] Natalia Pardo-Lorente, **Anestis Gkanogiannis**, Luca Cozzuto, Antoni Gañez Zapater, Lorena Espinar, Ritobrata Ghose, Jacqueline Severino, Laura García-López, Rabia Gül Aydin, Laura Martin, Maria Victoria Neguembor, Evangelia Darai, Maria Pia Cosma, Laura Batlle-Morera, Julia Ponomarenko, and Sara Sdelci. Nuclear localization of mthfd2 is required for correct mitosis progression. *Nature Communications*, 15(1):9529, 2024.

[5] Hifzur Rahman, Prashant Vikram, Yulan Hu, Sugandha Asthana, Abhinav Tanaji, Padmaktshni Suryanarayanan, Chris Quadros, Lovely Mehta, Mohammed Shahid, **Anestis Gkanogiannis**, Sumitha Thushar, Salma Balazadeh, Bernd Mueller-Roeber, Luis Augusto Becerra Lopez-Lavalle, Tong Wei, and Rakesh Kumar Singh. Mining genomic regions associated with agronomic and biochemical traits in quinoa through gwas. *Scientific Reports*, 14(1), 2024.

[6] Cécile Triay, Alice Boizet, Christopher Fragoso, **Anestis Gkanogiannis**, Jean-François Rami, and Mathias Lorieux. Fast and accurate imputation of genotypes from noisy low-coverage sequencing data in bi-parental populations, 2024.

[7] María Alejandra Ospina, **Anestis Gkanogiannis**, Luis Londoño, Thierry Tran, Sandra Salazar, Johanatan Newby, Luis Augusto, and Becerra Lopez-Lavalle. Estudio de asociación del genoma completo para contenido de cianuro en clones de yuca. *Biotecnología Productiva y Sostenible*, page 73, 2023.

[8] Laura Pascual-Reguant, Queralt Serra-Camprubí, Debayan Datta, Damiano Cianferoni, Savvas Kourtis, Antoni Gañez-Zapater, Chiara Cannatá, Lorena Espinar, Jessica Querol, Laura García-López, Sara Musa-Afaneh, Maria Guirola, **Anestis Gkanogiannis**, Andrea Miró Canturri, Marta Guzman, Olga Rodríguez, Andrea Herencia-Ropero, Joaquin Arribas, Violeta Serra, Luis Serrano, Tian V Tian, Sandra Peiró, and Sara Sdelci. Interactions between brd4s, loxl2, and med1 drive cell cycle transcription in triple-negative breast cancer. *EMBO Molecular Medicine*, 15(12):e18459, 2023.

[9] 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.

[10] 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.

[11] 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.

[12] 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.

[13] Mario Caccamo, Bruno A Santos, Faraz Khan, Andy Powell, Monica Carvajal-Yepes, **Anestis Gkanogiannis**, L Augusto Becerra Lopez-Lavalle, Joe Tohme, Peter Wenzl, and Sarah C Dyer. Developing a natural variation platform for pest-resistant cassava breeding. In *Plant and Animal Genome XXVII Conference (January 12-16, 2019)*. PAG, 2019.

[14] David Johnston-Monje, Janneth Guittierrez, Tatiana Ovalle, **Anestis Gkanogiannis**, and Luis Augusto Becerra Lopez-Lavalle. Provenance, transmission and dynamics of bacteriomes and mycobiomes in arabidopsis, brachypodium, maize, wheat, rice, tomato, soy, cassava and 9 other important species of angiosperm plant. In *Molecular Plant-Microbe Interactions*, volume 32, pages 211–211, 2019.

[15] Mathias Lorieux, **Anestis Gkanogiannis**, Christopher Fragoso, and Jean-François Rami. Noisymputer: genotype imputation in bi-parental populations for noisy low-coverage next-generation sequencing data. In *bioRxiv 658237*, 2019.

[16] Luis Augusto Becerra López-Lavalle, Fausto Villafrade Rodriguez Zapata, Tatiana Ovalle, Manuel Ruiz, **Anestis Gkanogiannis**, and Joe Tohmé. 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.

[17] **Anestis Gkanogiannis**, Alexis Dereeper, Boris Szurek, Carlos Zarate, Camilo López, Luis Augusto Becerra López-Lavalle, and Manuel Ruiz. The cassava genome hub. In *Proceedings Plant and Animal Genome XXVI Conference, 2018 PAG, San Diego*, 2018.

[18] Fausto Villafrade Rodriguez Zapata, Tatiana Ovalle, Manuel Ruiz, **Anestis Gkanogiannis**, and Luis Augusto Becerra López-Lavalle. 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.

[19] Stéphanie Bocs, David Couvin, Frédéric De Lamotte, Alexis Dereeper, Gaëtan Droc, Jean François Dufayard, Nordine El Hassouni, Cédric Farcy, **Anestis Gkanogiannis**, Valentin Guignon, and others. South green bioinformatics platform: Plateforme collaborative de bioinformatique verte héraultaise. CIRAD, 2017.

[20] **Anestis Gkanogiannis** and Brüls Thomas. A scalable assembly-free variable selection algorithm for biomarker discovery from metagenomes. *BMC Bioinformatics*, Aug 19;17(1):311, 2016.

[21] **Anestis Gkanogiannis** and Theodore Kalamboukis. 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.

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[25] Vaggelis Kotsonis, **Anestis Gkanogiannis**, Theodore Kalamboukis, and Stelios Eliakis. A greek-english cross language medical information retrieval system. In *Conference on Medical Imaging and Informatics, MIMI 2007, Beijing*, 2008.