Margarita Geleta

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PARTICULARS

EDUCATION

2022-present   **University of California, Berkeley**
Ph.D. in Computer Science
· **Courses (letter graded)**: *Machine Learning*; **(pass/no pass)**: *Theoretical Statistics*; **(audited)**: *Introduction to Computer Vision and Computational Photography*.

2021-2022   **University of California, Irvine (UCI)**
Ph.D. in Computer Science (transferred)
· **Courses (letter graded)**: *Artificial Intelligence, Scientific Computing, Machine Learning, Probabilistic Learning, Fundamentals of the Design and Analysis of Algorithms, Computational Methods in Genomics, Neural Networks & Deep Learning, Brain-Inspired Learning*; **(pass/no pass)**: *Seminars in Computer Science Research*.

2017-2021   **Universitat Politècnica de Catalunya (UPC)**
Bachelor of Data Science and Engineering
· Active member in the *Barcelona School of Informatics* (FIB) governance.
· **Courses (letter graded)**: *Data Analysis, Machine Learning, Mathematical Optimization, Deep Learning, Parallelism and Discrete Systems, Database Systems, Information Visualization, Information Retrieval and Analysis, Algorithmics, Statistics*.

RESEARCH INTERESTS

My research interests span the areas of *Data Science*, *Bioinformatics* and *Machine Learning*, along with its subdomains *Deep Learning* and *Computer Vision* (CV). I have a specific interest in *Generative Modelling*, *Deep Learning* applied to *Population Genetics*, audio & acoustic domain, *Signal Processing*, *Audio Feature Extraction* and *Audio Steganography*. Also, my interests fall in the field of *Sentiment & Toxicity Analysis* and *Hate Speech Detection*.

EXPERIENCE

RESEARCH EXPERIENCE

2022-present   **NI Lab (UC Berkeley,** co-advised by **Stanford University)**
Graduate Student Researcher
· Abstract accepted to *American Society of Human Genetics* (ASHG) 2022 [Abs1].

2021-2022
Oct. 2021 - Aug. 2022   **Engaging Technology and Application Design Lab (UC Irvine)**

Teaching Assistant & GSR

· Maintainer of the *Maestro* leaderboard and tester of the framework, providing a service for cybersecurity educational purposes in the domain of adversarial attacks and defenses.
· Teaching Assistant in CS175 (Project in AI).

2021
Jun. 2021 - Sept. 2021   **Bustamante Lab (Stanford University)**

Full-time Research Assistant

· Developed a pipeline for compression of *Single Nucleotide Polymorphism* (SNP) datasets.

· Explored Discrete-Space (*Multi-Bernoulli* and *Vector-Quantized*) Autoencoders for the purpose of SNP data compression.
· Abstract accepted to *American Society of Human Genetics* (ASHG) 2021 [Abs2].

Feb. 2021 -
Jun. 2021

Part-time Research Intern

· Explored novel Deep Learning techniques such as *Variational Autoencoders* (VAEs) with genomic data in a focus in dimensionality reduction, compression, privacy, and data simulation.
· Conducted my Bachelor Thesis titled *Unsupervised Learning with Applications in Genomics* [Ths1].

2020-2021
Sept. 2020 -
Mar. 2021

Image Processing Group (GPI)

DSP & DL Researcher

· Implemented classic Audio Steganography methods from the psychoacoustic approach – *LSB algorithm*, *Phase Coding* and *Echo Hiding*.
· Investigated Deep Learning architectures for Audio Steganography and trained an Audio Auto-encoder using *Short-Time Cosine Transform* for *Audio Feature Extraction*.
· Extended Abstract accepted to *Women in Computer Vision* workshop (in conjunction with the *Conference on Computer Vision and Pattern*) CVPR-WiCV 2021 [Abs3] and paper accepted to *International Conference on Acoustics, Speech, & Signal Processing* (ICASSP) 2022 [Pub1].

PROFESSIONAL EXPERIENCE

2022
Jun. 2022 -
Aug. 2022

Amazon.com

Applied Scientist

· Worked with large-scale Generative Models (GANs), GAN inversion techniques and deep harmonization.

2021
Jun. 2021 -
Jul. 2021

UPC School of Professional & Executive Development (UPC School)

Reinforcement Learning (RL) Lab Assistant

· Assisted students at the RL sessions of the Postgraduate Course in Artificial Intelligence with Deep Learning (AIDL). Topics covered include: *Q-Learning, DQN, Policy Gradients, Proximal Policy Optimization.*

2019-2021
Feb. 2020 -
Jun. 2021

JEDI Junior Enterprise (JEDI UPC)

Instructor at Machine Learning and Python course (40 h)

· Adapted the course for online teaching due to the coronavirus pandemic and tutored students through online platforms.
· Adapted materials for a blind student and guided them throughout the course.

Aug. 2019 -
Jun. 2021

Front-end developer

· Programmed the interface of a web-application for *Area Cooling Solutions S.A.* company.
· Overhauled the output of a microcontroller IMU sensor and upgraded the web-application visualizations.

Jun. 2019 -
Feb. 2020

Teaching Assistant at Machine Learning and Python course (40 h)

· Prepared coursework on *Multidimensional Scaling, Machine Learning* and *Optimization*.
· Helped students with *Exploratory Data Analysis* in their projects.

May 2020 -
Sept. 2020

ProxiShop

4 months	*Co-founder & Developer*
	· Developed a trading multi-platform e-commerce solution for local farmers and small businesses to reactivate the economy in Catalonia in times of the pandemic and the confinement.
	· Presented the project in several startup competitions, among which - *SmartCatalonia Challenge 2020* and *RuralApps 2020*, all of them funded by the Government of Catalonia.
	· Joined the 1000 European Initiatives by *Junior Enterprises Europe* (JEE) & *Junior Enterprises Global* (JEG).

LEADERSHIP & POSITION OF RESPONSIBILITY

2019-2021 **JEDI Junior Enterprise (JEDI UPC)**

Oct. 2020 -
Sept. 2021

President

· Had the honor to present the candidature and receive a prize of €1,000 for the best *Student Association in Education* at the *Polytechnic University of Catalonia* (UPC).
· Arranged collaborations with other associations from the *Polytechnic University of Catalonia* (UPC) and with organizations from the JE Network, at National and European levels, such as CEJE - the *Spanish Confederation of Junior Enterprises*, and *Junior Enterprises Europe* (JEE).

Sept. 2019 -
Oct. 2020

Vice-President & Secretary

· Directed the organization of JEDI Academy courses, winter edition 2020.
· Organized bimonthly workshops on Tech topics with +20 attendees at the *Barcelona School of Informatics* (FIB). Ran introductory R language workshop.
· Represented the Junior Enterprise in several Tech & startup events, such as *Tech Spirit Barcelona* and *SmartMobility Congress*.

2018-2021 **FIB Visiona**

Nov. 2020 -
Jul. 2021

President & Main Organizer

· Directed 4-people team for the first online edition of the FIB Visiona career fair (Autumn 2020) with more than 150 attendees, 40 recruiters and €12,000 in sponsorships raised.
· Directed 10-people team for the second online edition of the FIB Visiona career fair (Spring 2021) with more than 200 attendees, 12 companies, 75 recruiters and €23,000 in sponsorships raised.
· Donated €7,500 on scholarships for *Barcelona School of Informatics'* students and approved to donate €12,000 on more scholarships for the AY 21/22.

Oct. 2018 -
present

Co-founder & ExBo Member

· Co-founded FIB Visiona association, in charge of connecting UPC students with Tech companies.
· Co-directed 10-people team for the first edition of the FIB Visiona career fair (Spring 2019) with more than 200 attendees, 126 recruiters and €100,000 in sponsorships raised.

2017-2021 **Universitat Politècnica de Catalunya (UPC)**

Oct. 2018 -
Aug. 2021

Student representative at the Standing Committee

· Elected by *Barcelona School of Informatics'* Board members. The Standing Committee is the executive and permanent representative of the School Board.
· My responsibilities included discussing the most important decisions of the School.

Oct. 2018 -
Aug. 2021

Student representative at the School Board

· Elected by *Barcelona School of Informatics'* student body. The School Board is the governing body of the School.
· My main responsibility was to represent the opinion of all the students from the School.

Oct. 2017 - Mar. 2019	*Student representative at CAGCED*
	· Member and first student representative at the *Academic Committee of the Data Science and Engineering Degree* (CAGCED).

2020	**Junior Enterprises Global (JEG)**
Sept. 2020 - Nov. 2020	*Partnerships Manager*
	· Worked on the Value Proposition, support documents and contact list.

ACTIVITIES

2017-2020	**Universitat Politècnica de Catalunya (UPC)**
Oct. 2018 - Nov. 2020	*Member of the Barcelona School of Informatics Student Delegation (DEFIB)*
	· Active member at the *Communication Commission*. · Designed posters to highlight the contributions of female scientists and engineers, which now remain at the School's Museum.
Oct. 2017 - May 2018	*Member of the TelecomBCN Student Delegation (DAT)*
	· Of the *Barcelona School of Telecommunications Engineering* (ETSETB).

VOLUNTEERING

2019-2020	**HackUPC**
Mar. 2019 - Feb. 2020	*Designer & Organizer*
	· Led brand redesign in 30-person team for HackUPC 2019, Spain's largest student hackathon with 700 attendees. Designed web, merchandising and social network post templates.

2018-2019	**Universitat Politècnica de Catalunya (UPC)**
Summer 2019	*Volunteer at the Summer Course of Algorithmics and Programming*
	· Assisted teenagers with learning C++ and Python and monitored the visit to the School's Museum.
Autumn 2019	*Coach & Mentor*
	· Finished a *Coaching and Mentoring course* (10 h) at the *Polytechnic University of Catalonia* to become a mentor of Data Science & Engineering degree freshmen for seven weeks.
Summer 2018	*Volunteer at the Summer Course of Algorithmics and Programming*
	· Assisted teenagers with learning C++ and Python and monitored the visit to the *Marenostrum 4* Supercomputer at the *Barcelona Supercomputer Center* (BSC).

RELEVANT PROJECTS

Nov. 2020	**Forbidden Territories**
2 weeks	*Data Scientist & Developer* · Created a NLP multilingual model (7 languages) with contextual embeddings which detected sections in lyrics which had a high probability of being censored. · Developed a web-application with *Lyric Censorship Analyzer* model deployment. · Presented this project at the Sónar+D Innovation Challenge 2020.

Mar. 2020	**ConfinApp Commerce**

1 week	*Front-end developer*
	· Designed a mobile application to promote the proximity commerce during the first stage of the confinement. This project has been one of the highlighted projects of Hackovid, a hackathon by the Government of Catalonia.

HONORS & AWARDS

2022	Won 1st place at the Associated Graduate Students (AGS) Symposium 2022 at UCI in the *Astronomy / Physics / Math / Computer Science* track.
2022	Fellowship for CS Ph.D. program by the EECS Department, University of California, Berkeley.
2021	CS Department Dean's Fellowship for AY 21/22, Donald Bren School of Information and Computer Sciences - in recognition of outstanding research potential.
2021	Fellowship for CS Ph.D. program by the Department of Computer Science, UC Irvine.
2020	Received a *"Matricula de Honor"* academic honor for an excellent research project on Deep Audio Steganography.
2020	Nominated for the *Dona TIC Award* (2nd place), as a recognition for my contributions to the STEM world of new technologies and as a role model to young women.
2018	Received a *"Matricula de Honor"* academic honor for obtaining a 10/10 in the Parallelism and Distributed Systems course.
2017	Awarded for the Best High School research project in *La Selva* about video game development, at the *"IV Mostra de Treballs de Recerca"*.
2017	Finished High School with Honors (*"Matricula de Honor"* academic honor).

MEMBERSHIPS

2021-pres.	Member of the *American Society of Human Genetics* (ASHG).
2021-pres.	Member of the *Computer Vision Foundation* (CVF).

PUBLICATIONS

[Pub1] **Margarita Geleta**, Cristina Punti, Kevin McGuinness, Jordi Pons, Cristian Canton, and Xavier Giro i Nieto. Pixinwav: Residual steganography for hiding pixels in audio. In *ICASSP 2022 - 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 2485–2489, 2022.

[Pub2] Maria Perera, Daniel Mas Montserrat, Míriam Barrabés, **Margarita Geleta**, Xavier Giró-i Nieto, and Alexander G. Ioannidis. Generative moment matching networks for genotype simulation. *bioRxiv*, 2022.

[Pub3] **Margarita Geleta**, Daniel Mas Montserrat, Carlos D. Bustamante, Xavier Giró i Nieto, and Alexander G. Ioannidis. Unsupervised learning with applications in genomics. Submitted, 2021.

[Pub4] Marta R. Costa-jussà, Roger Creus, Oriol Domingo, Albert Domínguez, Miquel Escobar, Cayetana López, Marina Garcia, and **Margarita Geleta**. Mt-adapted datasheets for datasets: Template and repository. https://arxiv.org/abs/2005.13156, 2020.

ABSTRACTS AND POSTERS

[Abs1] **Margarita Geleta**, Maria Perera, Míriam Barrabés, Xavier Giró-i Nieto, and Alexander Ioannidis. Poster: Generation of synthetic genotypes with neural networks. https://www.researchgate.net/publication/365052112_Generation_of_Synthetic_Genotypes_with_Neural_Networks, 2022.

[Abs2] **Margarita Geleta**, Daniel Montserrat, Carlos Bustamante, Xavier Giró-i Nieto, and Alexander Ioannidis. Deep variational autoencoders for population genetics. https://www.researchgate.net/publication/364357930_Deep_Variational_Autoencoders_for_Population_Genetics, 2021.

[Abs3] **Margarita Geleta**, Cristina Puntí Alvarez, Kevin McGuinness, Jordi Pons, Cristian Canton, and Xavier Giró-i Nieto. Residual steganography for hiding pixels in audio. https://www.researchgate.net/publication/365072985_Residual_Steganography_for_Hiding_Pixels_in_Audio, 2021.

THESES

[Ths1] **Margarita Geleta**. Bachelor thesis: Unsupervised learning with applications in genomics. `https://upcommons.upc.edu/handle/2117/353817`, 2021.

TECHNICAL SKILLS

Programming	C++, C, C#, Python, R, Dart.	**Scripting**	JS, PHP, Bash.
Markup	HTML5, CSS3.	**Frameworks**	Django, Flutter, ReactJS.
Databases	PostgreSQL, SQLite.		

LANGUAGES

Spanish, Catalan & Russian: native.
English: proficient in spoken and written English. TOEFL iBT (Score 101), *November 2020.*
Appointment number: 9733 7112 0335 0471.