

Margarita Geleta

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PARTICULARS

EDUCATION

- 2022-present** **University of California, Berkeley**
Ph.D. in Computer Science
· **Courses (letter graded):** *Machine Learning, Deep Neural Networks, Computer Vision, Security in Computer Systems, Natural Language Processing; (pass/no pass): Theoretical Statistics; (audited): Introduction to Computer Vision and Computational Photography.*
· **Haas School of Business Courses (letter graded):** *Leading High Impact Teams.*
- 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 *Deep Learning* and *Computer Vision* (CV). I have a specific interest in *Generative Modelling*, *Super Resolution* and *Deep Learning* applied to *Population Genetics*

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** **Engaging Technology and Application Design Lab (UC Irvine)**
Oct. 2021 -
Aug. 2022 *Teaching Assistant & GSR*
· Maintainer of the *Maestro* leaderboard and tester of the framework [Pub2], providing a service for cybersecurity educational purposes in the domain of adversarial attacks and defenses.
· Teaching Assistant in CS175 (Project in AI).
- 2021** **Bustamante Lab (Stanford University)**
Jun. 2021 -
Sept. 2021 *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 [Pub5].

PROFESSIONAL EXPERIENCE

- 2022**
- May 2023 -
Aug. 2023
- Amazon.com**
- Applied Scientist*
- Worked with large-scale Generative Models.
- Jun. 2022 -
Aug. 2022
- Applied Scientist*
- Worked with large-scale Generative Models (GANs), GAN inversion techniques [Pub3] 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
4 months

ProxiShop

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
Oct. 2020 -
Sept. 2021

JEDI Junior Enterprise (JEDI UPC)

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
Nov. 2020 -
Jul. 2021

FIB Visiona

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
Oct. 2018 -
Aug. 2021

Universitat Politècnica de Catalunya (UPC)

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

	<ul style="list-style-type: none"> · Elected by <i>Barcelona School of Informatics'</i> 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	<i>Student representative at CAGCED</i>
	<ul style="list-style-type: none"> · Member and first student representative at the <i>Academic Committee of the Data Science and Engineering Degree</i> (CAGCED).
2020	Junior Enterprises Global (JEG)
Sept. 2020 - Nov. 2020	<i>Partnerships Manager</i>
	<ul style="list-style-type: none"> · Worked on the Value Proposition, support documents and contact list.

ACTIVITIES

2017-2020	Universitat Politècnica de Catalunya (UPC)
Oct. 2018 - Nov. 2020	<i>Member of the Barcelona School of Informatics Student Delegation (DEFIB)</i>
	<ul style="list-style-type: none"> · Active member at the <i>Communication Commission</i>. · Designed posters to highlight the contributions of female scientists and engineers, which now remain at the School's Museum.
Oct. 2017 - May 2018	<i>Member of the TelecomBCN Student Delegation (DAT)</i>
	<ul style="list-style-type: none"> · Of the <i>Barcelona School of Telecommunications Engineering</i> (ETSETB).

VOLUNTEERING

2022	UC Berkeley
Oct. 2022	<i>Reviewer for the Equal Access to Application Assistance (EAAA) Program</i>
	<ul style="list-style-type: none"> · Helped equalizing access guidance on the higher degree application process.
2019-2020	HackUPC
Mar. 2019 - Feb. 2020	<i>Designer & Organizer</i>
	<ul style="list-style-type: none"> · 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	<i>Volunteer at the Summer Course of Algorithmics and Programming</i>
	<ul style="list-style-type: none"> · Assisted teenagers with learning C++ and Python and monitored the visit to the School's Museum.
Autumn 2019	<i>Coach & Mentor</i>
	<ul style="list-style-type: none"> · Finished a <i>Coaching and Mentoring course</i> (10 h) at the <i>Polytechnic University of Catalonia</i> to become a mentor of Data Science & Engineering degree freshmen for seven weeks.
Summer 2018	<i>Volunteer at the Summer Course of Algorithmics and Programming</i>
	<ul style="list-style-type: none"> · Assisted teenagers with learning C++ and Python and monitored the visit to the <i>Marenostrum 4</i> Supercomputer at the <i>Barcelona Supercomputer Center</i> (BSC).

RELEVANT PROJECTS

Nov. 2020	Forbidden Territories
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- 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.

REVIEWER SERVICE

- 2023** Reviewer at the *Women in Computer Vision Workshop* (WiCV) at the *IEEE/CVF Computer Vision and Pattern Recognition Conference* (CVPR).

HONORS & AWARDS

- 2023** Samuel Silver Memorial Scholarship (\$1,000).
- 2022** BAIR First Year Research Ignition Award (\$5,000).
- 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 (\$10,000).
- 2021** Fellowship for CS Ph.D. program by the Department of Computer Science, UC Irvine.
- 2020** Represented and received the *Best Student Association in Education* Award at the Polytechnic University of Catalonia (UPC).
- 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

- 2023-pres.** Associate member of the *Sigma Xi, The Scientific Research Honor Society* ($\Sigma\Xi$).
- 2022-pres.** Member of the *Association for Computing Machinery* (ACM).
- 2021-2023.** Member of the *American Society of Human Genetics* (ASHG).
- 2021-pres.** Member of the *Computer Vision Foundation* (CVF).

PUBLICATIONS

- [Pub1] Jaume Ros, **Margarita Geleta**, Jordi Pons, and Xavier Giro i Nieto. Towards robust image-in-audio deep steganography. Under Review, 2023.
- [Pub2] **Margarita Geleta**, Jiachen Xu, Junlin Wang Manikanta Loya, Sameer Singh, Zhou Li, and Sergio Gago-Masague. Maestro: A gamified platform for teaching ai robustness. In *The Thirteenth Symposium on Ed-*

ucational Advances in Artificial Intelligence (EAAI-23) in the Association for the Advancement of Artificial Intelligence Conference (AAAI), 2023.

- [Pub3] Qianli Feng, Viraj Shah, Raghudeep Gadde, **Margarita Geleta**, Pietro Perona, and Aleix Martinez. Near perfect gan inversion. (Submitted. Awaiting decision), 2023.
- [Pub4] **Margarita Geleta**, Daniel Mas Montserrat, Carlos D. Bustamante, Xavier Giró i Nieto, and Alexander G. Ioannidis. Deep variational autoencoders for population genetics. (Submitted. Awaiting decision), 2023.
- [Pub5] **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.
- [Pub6] 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.
- [Pub7] 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.

TALKS

- | | |
|-------------|---|
| 2023 | Talk at WiCSE Berkeley-Stanford Meetup 2023 in Berkeley, CA, USA: <i>Deep Steganography</i> . |
| 2023 | Invited Speaker at the Research Panel in Berkeley, CA, USA: <i>Machine Learning @ Berkeley</i> . |
| 2023 | Lightning Talk at AAAI 2023 in Washington, D.C., USA: <i>Maestro: A Gamified Platform for Teaching AI Robustness</i> . |
| 2022 | Talk at DLBCN 2022 in Barcelona, Spain: <i>PixInWav: Hiding Pixels in Audio</i> . |
| 2022 | Talk at AGS 2022 in Irvine, CA, USA: <i>PixInWav: Hiding Pixels in Audio</i> . |
| 2021 | Talk at Ioannidis Lab Summer Retreat in Stanford, CA, USA/virtual: <i>Autoencoders for Population Genetics</i> . |
| 2021 | Talk at Barcelona Google Developer Student Clubs: Introduction to Machine Learning with DSC UPC (https://gdsc.community.dev/j/7m795shsefhsz/). |
| 2021 | Live Roundtable Discussion at STEM Talks Menorca in Menorca, Spain/virtual, organized by Google Developers Group Menorca. |
| 2019 | Workshop Barcelona School of Informatics (FIB) in Barcelona, Spain: <i>Introduction to R</i> . |

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.