

# Margarita Geleta

margaritageleta.github.io

geleta@berkeley.edu

+1 (949) 992 7053

## PARTICULARS

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### 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

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#### 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 [Abs3].
- 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 [Pub4], 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 [Abs1] and paper accepted to *International Conference on Acoustics, Speech, & Signal Processing* (ICASSP) 2022 [Pub3].

## PROFESSIONAL EXPERIENCE

- 2022**
- May 2023 -  
Aug. 2023
- Amazon.com**
- Applied Scientist*
- Worked with large-scale Generative Models (GANs, diffusion models), GAN inversion techniques and image-to-image translation.
- Jun. 2022 -  
Aug. 2022
- Applied Scientist*
- Worked with large-scale Generative Models (GANs), GAN inversion techniques [Pub6] 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 (Fall 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"> <li>· Elected by <i>Barcelona School of Informatics'</i> student body. The School Board is the governing body of the School.</li> <li>· My main responsibility was to represent the opinion of all the students from the School.</li> </ul>
Oct. 2017 - Mar. 2019	<i>Student representative at CAGCED</i>
	<ul style="list-style-type: none"> <li>· Member and first student representative at the <i>Academic Committee of the Data Science and Engineering Degree</i> (CAGCED).</li> </ul>
<b>2020</b>	<b>Junior Enterprises Global (JEG)</b>
Sept. 2020 - Nov. 2020	<i>Partnerships Manager</i>
	<ul style="list-style-type: none"> <li>· Worked on the Value Proposition, support documents and contact list.</li> </ul>

## ACTIVITIES

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

## VOLUNTEERING

<b>2022</b>	<b>UC Berkeley</b>
Oct. 2022	<i>Reviewer for the Equal Access to Application Assistance (EAAA) Program</i>
	<ul style="list-style-type: none"> <li>· Helped equalizing access guidance on the higher degree application process.</li> </ul>
<b>2019-2020</b>	<b>HackUPC</b>
Mar. 2019 - Feb. 2020	<i>Designer &amp; Organizer</i>
	<ul style="list-style-type: none"> <li>· 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.</li> </ul>
<b>2018-2019</b>	<b>Universitat Politècnica de Catalunya (UPC)</b>
Summer 2019	<i>Volunteer at the Summer Course of Algorithmics and Programming</i>
	<ul style="list-style-type: none"> <li>· Assisted teenagers with learning C++ and Python and monitored the visit to the School's Museum.</li> </ul>
Fall 2019	<i>Coach &amp; Mentor</i>
	<ul style="list-style-type: none"> <li>· 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 &amp; Engineering degree freshmen for seven weeks.</li> </ul>
Summer 2018	<i>Volunteer at the Summer Course of Algorithmics and Programming</i>
	<ul style="list-style-type: none"> <li>· 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).</li> </ul>

## RELEVANT PROJECTS

<b>Nov. 2020</b>	<b>Forbidden Territories</b>
2 weeks	<i>Data Scientist &amp; Developer</i>

- 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

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2023

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

## HONORS & AWARDS

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2023

Samuel Silver Memorial Scholarship (\$1,000).

2022

BAIR First Year Research Ignition Award (\$5,000).

2022

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

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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

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[Pub1] 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.

[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. In *2022 44th Annual*

*International Conference of the IEEE Engineering in Medicine Biology Society (EMBC)*, pages 1379–1383, 2022.

- [Pub3] **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.
- [Pub4] **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 Educational Advances in Artificial Intelligence (EAAI-23) in the Association for the Advancement of Artificial Intelligence Conference (AAAI)*, 2023.
- [Pub5] Jaume Ros\*, **Margarita Geleta\***, Jordi Pons, and Xavier Giro i Nieto. Towards robust image-in-audio deep steganography. (Submitted. Awaiting decision), 2023.
- [Pub6] Qianli Feng, Viraj Shah, Raghudeep Gadde, **Margarita Geleta**, Pietro Perona, and Aleix Martinez. Near perfect gan inversion. (Submitted. Awaiting decision), 2023.
- [Pub7] **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.
- [Pub8] Anonymous authors. Semantic search for observability data using large language models. (Submitted. Awaiting decision), 2023.

## ABSTRACTS AND POSTERS

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- [Abs1] **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](https://www.researchgate.net/publication/365072985_Residual_Steganography_for_Hiding_Pixels_in_Audio), 2021.
- [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](https://www.researchgate.net/publication/364357930_Deep_Variational_Autoencoders_for_Population_Genetics), 2021.
- [Abs3] **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](https://www.researchgate.net/publication/365052112_Generation_of_Synthetic_Genotypes_with_Neural_Networks), 2022.
- [Abs4] **Margarita Geleta**, Jiachen Xu, Manikanta Loya, Junlin Wang, Sameer Singh, Zhou Li, and Sergio Gago-Masague. Design factors of maestro: A serious game for robust ai education. In *Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 2*, SIGCSE 2023, page 1318, New York, NY, USA, 2023. Association for Computing Machinery.
- [Abs5] Jaume Ros\*, **Margarita Geleta\***, Jordi Pons, and Xavier Giró-i Nieto. Towards robust image-in-audio deep steganography. [https://www.researchgate.net/publication/371638577\\_Towards\\_Robust\\_Image-in-Audio\\_Deep\\_Steganography\\_Poster/related](https://www.researchgate.net/publication/371638577_Towards_Robust_Image-in-Audio_Deep_Steganography_Poster/related), 2023.

## THESES

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

## TALKS

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|-------------|---|
| <b>2023</b> | <b>Talk at WiCSE Berkeley-Stanford Meetup 2023</b> in Berkeley, CA, USA: <i>Deep Steganography</i> .                          |
| <b>2023</b> | <b>Invited Speaker at the Research Panel</b> in Berkeley, CA, USA: <i>Machine Learning @ Berkeley</i> .                       |
| <b>2023</b> | <b>Lightning Talk at AAAI 2023</b> in Washington, D.C., USA: <i>Maestro: A Gamified Platform for Teaching AI Robustness</i> . |
| <b>2022</b> | <b>Talk at DLBCN 2022</b> in Barcelona, Spain: <i>PixInWav: Hiding Pixels in Audio</i> .                                      |
| <b>2022</b> | <b>Talk at AGS 2022</b> in Irvine, CA, USA: <i>PixInWav: Hiding Pixels in Audio</i> .   |
| <b>2021</b> | <b>Talk at Ioannidis Lab Summer Retreat</b> 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: *Introduction to R*.

## TECHNICAL SKILLS

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**Programming** C++, C, C#, Python, R, Dart.

**Markup** HTML5, CSS3.

**Databases** PostgreSQL, SQLite.

**Scripting** JS, PHP, Bash.

**Frameworks** Django, Flutter, ReactJS.

## LANGUAGES

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**Spanish, Catalan & Russian:** native.

**English:** proficient in spoken and written English. TOEFL iBT (Score 101), *November 2020*.

Appointment number: 9733 7112 0335 0471.