Gabriel Mateo **Mejía Sepúlveda**

Biomedical & Electronic Engineering · Universidad de Los Andes

(+57) 3213591911 | gm.mejia@uniandes.edu.co | g27182818.github.io/ | g27182818 | Gabriel-Mateo-Mejia | Gabriel Mejía

Profile

Last year master's student in biomedical engineering focused on deep learning for biomedical applications, founded by a Google DeepMind scholarship. My interests are at the intersection of AI/ML, omics data, and drug discovery. I am particularly excited about applications such as inverse protein folding, small molecule design, digital twins, early diagnosis techniques, and the recognition of therapeutic targets in cancer/aging. I have extensive experience in AI for transcriptomic analysis and current computer vision techniques. I consider myself oriented to problem solving and I highly value the translation of theoretical studies to real-world clinical practice.

Education

M. S. Biomedical Engineering — *Bogotá, Colombia*

Universidad de los Andes — *Jan. 2022 - Dec. 2023*

- Google DeepMind scholar.
- Emphasis in Deep Learning applied to transcriptomic analysis.
- Relevant courses: Advanced Machine Learning, Computer Vision.

B. E. Biomedical Engineering - Summa Cum Laude — *Bogotá, Colombia*

Universidad de los Andes, GPA: 4.80/5.0 — *Jan. 2018 - Apr. 2022*

- Relevant courses: Processing and Analysis of Biomedical Images, Biotechnology and Biomolecular Engineering.

B. E. Electronic Engineering - Summa Cum Laude — *Bogotá, Colombia*

Universidad de los Andes, GPA: 4.81/5.0 — *Aug. 2017 - Oct. 2022*

- Relevant courses: Dynamic Systems, Reinforcement Learning, Stochastic Processes.
- Minor in chinese language & culture

Research Experience

Biomedical Computer Vision Group — *Bogotá, Colombia*

Research projects professional — *Jun. 2021 - Present*

- Principal investigator: Pablo Arbelaez Ph.D.
- Developed methods for gene expression prediction from histology images in spatial transcriptomics using graph neural networks (GNNs).
- Used logistic models to develop a state-of-the-art classification/detection model for cancer diagnosis using bulk RNA-seq.
- Designed a random forest model for 3D brain tumor segmentation in multi-parametric magnetic resonance imaging scans.
- Developing interpretable transcriptomic aging clocks using GNNs.

Research Group in Nano-Biomaterials, Cellular Engineering and Bio-Printing — *Bogotá, Colombia*

Wet lab research assistant — *Aug. 2020 - Jun 2021*

- Principal investigator: Juan Carlos Cruz Ph.D.
- Worked on the development of a library of anti-microbial and translocating peptides assessed by yeast surface display methods.

Selected Publications

SEPAL: Spatial Gene Expression Prediction from Local Graphs — *ICCV CVAMD2023*

Mejía, G. M., Cardenas, P., Ruiz, D., Castillo, A., Arbeláez, P. — *Oct. 2023*

https://doi.org/10.48550/arXiv.2309.01036

CanDLE: Illuminating Biases in Transcriptomic Pan-Cancer Diagnosis — *MICCAI CMMCA2022*

Mejía, G. M., Bloch, N., Arbeláez, P. — *Sept. 2022*

https://doi.org/10.1007/978-3-031-17266-3_7

Hirni: Segmentation of Brain Tumors in Multi-parametric Magnetic Resonance Imaging Scans — *CI-BI&BI*

Mejía, G. M., Moreno, D., Ruiz, D., Aparicio, N. — *Dec. 2021*

https://doi.org/10.1109/CI-IBBI54220.2021.9626115

Teaching Experience

Undergraduate Teaching Assistant *Bogotá, Colombia*

Universidad de los Andes. *Jul. 2017 - Dec. 2021*

- Teaching assistant of the following undergraduate courses: Dynamic systems (2 years), undergraduate physics support (1.5 years), undergraduate mathematics support (1.5 years), Freshman students' Support Program (1 year), digital systems (1 semester), control systems analysis (1 semester), biomedical image processing and analysis (1 semester), electronics workshop (1 semester).

Honors & Awards

2023	**Best Paper Award**, ICCV Workshop on Computer Vision for Automated Medical Diagnosis	*CDG, France*
2022	**Best Paper Award**, MICCAI Workshop on Computational Mathematics Modeling in Cancer Analysis.	*SIN, Singapur*
2022	**DeepMind Scholarship**, One of three awarded by academic excellence and research in Artificial Intelligence.	*BOG, Colombia*
2022	**Otto de Greiff Contest**, Third best undergraduate thesis in Colombia (Appropriated technologies category).	*CLO, Colombia*
2022	**Best Graduation GPA**, Of the electronic and biomedical engineering departments.	*BOG, Colombia*
2022	**Summa Cum Laude**, Top 1% graduation GPA in engineering faculty over the past 5 years and integral merits.	*BOG, Colombia*
2019	**Ramon de Zubiría**, Highest overall GPA of biomedical and electronic engineering departments.	*BOG, Colombia*

Skills

Programming Languages	Python, Matlab, R, C/C++.
Scientific Software	NumPy, SciPy, Pandas, RDKit, Scanpy, Squidpy.
ML Frameworks	Pytorch, Scikit-Learn, H2O.
ML Monitoring	Weights and biases.
Languages	Spanish (Native), English (Professional), German (Basic).

Events

2023	**Oral Presentation**, ICCV workshop on Computer Vision for Automated Medical Diagnostics	*CDG, France*
2023	**Poster Presentation**, 10th Aging Research and Drug Discovery Conference	*CPH, Denmark*
2023	**Poster Presentation**, Khipu: 4th Latin American Meeting In Artificial Intelligence	*MVD, Uruguay*
2022	**Speaker**, IEEE R9 Latin American Student Congress	*BOG, Colombia*
2022	**Oral Presentation**, MICCAI workshop on Computational Mathematics Modeling in Cancer Analysis	*SIN, Singapur*
2021	**Oral Presentation**, IEEE 2nd International Congress of Biomedical Engineering and Bioengineering	*BOG, Colombia*