

# Valeh Valiollah Pour Amiri

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## EDUCATION

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STANFORD UNIVERSITY. Stanford, CA.

### Ph.D. in Genetics

9/2023 -

Rotations: [Kundaje lab](#) (Genetics+CS), [Satpathy lab](#) (Pathology), [Leskovec lab](#) (CS), [Chang lab](#) (Genetics)

COLUMBIA UNIVERSITY. New York, NY.

### M.S. in Computer Engineering

9/2014 - 12/2015

Select courses: Analysis of Algorithms, Modeling & Performance Evaluation, Embedded Scalable Platforms

TÉLÉCOM PARISTECH. Paris, France.

### Diplôme d'ingénieur (B.S. + M.S.) in Computer Science & Electrical Engineering

9/2012 - 12/2015

Select courses: Information Theory, Probability & Statistics, Optimization, Signal Processing, Concurrency

LYCÉE DU PARC. Lyon, France.

### Classes Préparatoires, MPSI / MP-star. Advanced Mathematics and Physics.

2010 - 2012

Intensive program preparing top students for competitive entrance exams to the Grandes Écoles.

Select areas: abstract/linear algebra, differential equations, differential/integral calculus, multivariate calculus

## ADDITIONAL COURSES

EECS126: Probability & Random Processes (UC Berkeley), Machine Learning (Coursera | Stanford), Deep Learning Specialization (Coursera | DeepLearning.ai), STAT110: Introduction to Probability (edX | Harvard), Bioinformatics for Beginners (Coursera | UCSD), Algorithms for DNA Sequencing (Coursera | JHU).

2020 -

## EXPERIENCE

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### PROFESSIONAL EXPERIENCE

STANFORD UNIVERSITY | Kundaje Lab. Stanford, CA.

#### Research Engineer.

3/2023 - 9/2023

- Performed variant effect prediction using interpretable models of chromatin accessibility ([chromBPNet](#)).
- Conducted single-cell analysis of pediatric leukemia datasets.

UC BERKELEY | Yosef Lab. Berkeley, CA.

#### Research Engineer.

8/2021 - 2/2023

- Developed open-source software for deep generative modeling of single-cell omics data ([scvi-tools](#)).
- Enabled use of pre-trained scvi-tools models in the absence of high-dimensional data, yielding up to 50-fold+ file size reduction. Built a hub of such models.
- Co-Developed in a team of two a reproducible pipeline to process and analyze joint RNA, protein, and T/B cell receptor sequences of ~2M cells from 23 donors and 12 organs ([immune aging](#)).

MICROSOFT | OneDrive desktop client for file sync. Redmond, WA.

#### Software Engineer I, II, Senior.

2/2016 - 7/2021

- Developed novel algorithms for multimodal content synchronization.
- Identified service API needs for efficient content sync. Partnered with SharePoint teams to address them.
- Designed and implemented a mechanism to measure sync state correctness.

QUALCOMM | Windows on ARM. Raleigh, NC.

#### Software Engineering Intern.

6/2015 - 9/2015

- Developed a tool to establish memory-based socket connections from a PC to an ARMv8 chip.
- Invented a memory-based communication protocol between the host (PC) and the target (chip).

## ACADEMIC RESEARCH PROJECTS

COLUMBIA UNIVERSITY | **Microbenchmarking of a System-on-Chip**

10/2015 - 12/2015

- Developed a parametrizable microbenchmark to measure memory characteristics of a system-on-chip.
- Characterized copy throughput (per access pattern), L1 data cache size, effect of DRAM row-buffer size.

COLUMBIA UNIVERSITY | **Hardware Accelerator for Feature Extraction in Multivariate Datasets**

1/2015 - 5/2015

- Designed a hardware accelerator for the PCA algorithm and implemented it in synthesizable SystemC.
- Integrated the accelerator on a system-on-chip using device driver programming.

## PUBLICATONS

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(\* denotes equal contribution)

- Can Ergen\*, **Valeh Valiollah Pour Amiri\***, Martin Kim, Aaron Streets, Adam Gayoso, and Nir Yosef. *Scvi-hub: an actionable repository for model-driven single cell analysis*. [bioRxiv](#) 2024
- Steven B. Wells\*, Daniel B. Rainbow\*, Michal Mark\*, Peter A. Szabo\*, Can Ergen\*, Ana Raquel Maceiras\*, Daniel P. Caron, Elior Rahmani, Eli Benuck, **Valeh Valiollah Pour Amiri**, David Chen, Allon Wagner, Sarah K. Howlett, Lorna B. Jarvis, Karen L. Ellis, Masaru Kubota, Rei Matsumoto, Krishnaa Mahbubani, Kouresh Saeb-Parsy, Cecilia Dominguez-Conde, Laura Richardson, Chuan Xu, Shuang Li, Lira Mamanova, Liam Bolt, Alicja Wilk, Sarah A. Teichmann, Donna L. Farber, Peter A. Sims, Joanne L. Jones, and Nir Yosef. *Multimodal profiling reveals tissue-directed signatures of human immune cells altered with age*. [bioRxiv](#) 2024
- Isaac Virshup\*, Danila Bredikhin\*, Lukas Heumos\*, Giovanni Palla\*, Gregor Sturm\*, Adam Gayoso\*, Ilia Kats, Mikaela Koutrouli, Philipp Angerer, Volker Bergen, Pierre Boyeau, Maren Büttner, Gokcen Eraslan, David Fischer, Max Frank, Justin Hong, Michal Klein, Marius Lange, Romain Lopez, Mohammad Lotfollahi, Malte D. Luecken, Fidel Ramirez, Jeffrey Regier, Sergei Rybakov, Anna C. Schaar, **Valeh Valiollah Pour Amiri**, Philipp Weiler, Galen Xing, Bonnie Berger, Dana Pe'er, Aviv Regev, Sarah A. Teichmann, Francesca Finotello, F. Alexander Wolf, Nir Yosef, Oliver Stegle, and Fabian J. Theis. *The scverse project provides a computational ecosystem for single-cell omics data analysis*. [Nature Biotechnology](#) 2023
- Adam Gayoso\*, Romain Lopez\*, Galen Xing\*, Pierre Boyeau, **Valeh Valiollah Pour Amiri**, Justin Hong, Katherine Wu, Michael Jayasuriya, Edouard Mehlman, Maxime Langevin, Yining Liu, Jules Samaran, Gabriel Misrachi, Achille Nazaret, Oscar Clivio, Chenling Xu, Tal Ashuach, Mohammad Lotfollahi, Valentine Svensson, Eduardo da Veiga Beltrame, Vitalii Kleshchevnikov, Carlos Talavera-Lopez, Lior Pachter, Fabian J. Theis, Aaron Streets, Michael I. Jordan, Jeffrey Regier, and Nir Yosef. *A Python library for probabilistic analysis of single-cell omics data*. [Nature Biotechnology](#) 2022

## TEACHING

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- Lecturer and Head TA | Center for Computational Biology Bioinformatics Bootcamp. UC BERKELEY Summer 2022
- Head TA | Center for Computational Biology Bioinformatics Bootcamp. UC BERKELEY Winter 2021
- Teaching Assistant | COMS W3101 Programming Languages (Linux). COLUMBIA UNIVERSITY Fall 2015

## PRESENTATIONS

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- Assembling tissue references workshop. CZI SCIENCE 5/2022
- Computational Biology skills seminar. UC BERKELEY 4/2022

## PATENTS & AWARDS

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- Hydration of a hierarchy of dehydrated files ([USPTO](#)). Patent # 11,010,408. Issued 5/2021
- File synchronizing service status monitoring and error handling ([USPTO](#)). Patent # 10,795,747. Issued 10/2020
- Merit Scholarship awarded by the Fondation Télécom for academic excellence. 2013
- National prize awarded to outstanding female students pursuing higher education in STEM. 2011