Melanie Davila
SOFTWARE ENGINEER

CONTACT

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SKILLS

Proficient
- ❏ Python
- ❏ Pandas
- ❏ AWS
- ❏ R
- ❏ Shiny
- ❏ JavaScript
- ❏ Git
- ❏ Unix
- ❏ HPC

Familiar
- ❏ Docker
- ❏ Terraform
- ❏ Bash
- ❏ React.js
- ❏ Redux
- ❏ SQL
- ❏ HTML/CSS
- ❏ Ruby
- ❏ Rails

WORK EXPERIENCE

Icahn School of Medicine at Mount Sinai   **May 2017 - July 2019**
Associate Computational Scientist (Software Engineer)   New York, NY
- ❏ Designed and implemented AWS infrastructure, streamlining data processing, analysis, and storage workflows and reducing hands-on data processing and primary analysis time by 71%
- ❏ Developed Python/pandas-based data pipelines for single-cell RNA-seq and CITE-seq experiments, enabling R&D, and leading data processing and primary analysis efforts for $12M clinical trial
- ❏ Leveraged HPC clusters to develop and run mass cytometry pipelines, providing researchers with visualizations of high-dimensional data
- ❏ Created applications with R, Shiny, and ggplot2 for mass cytometry quality control, increasing data integrity and providing a user-friendly interface for lab staff to export and visualize data

Memorial Sloan Kettering Cancer Center   **Oct 2014 - Oct 2016**
Research Study Assistant II   New York, NY
- ❏ Managed over 300 pediatric oncology clinical trial enrollments and performed analyses of corresponding data, facilitating peer-reviewed publications and contributing to outstanding performance during audits

RUCDR Infinite Biologics   **Dec 2013 - Jun 2014**
Laboratory/Technical Assistant (Temporary)   Piscataway, NJ
- ❏ Performed SNP analyses on DNA samples, gathering data regarding human disease

EDUCATION

App Academy   **Dec 2016 - Mar 2017**
- ❏ Rigorous full stack web development course with ~3% acceptance rate

Rutgers University   **Sep 2009 - May 2013**
- ❏ Major: Genetics, B.A. (Magna Cum Laude)
- ❏ Minor: Public Health

VOLUNTEER EXPERIENCE

Mount Sinai Center for Excellence in Youth Education   Oct 2018 - July 2019
Biotechnology Educator   New York, NY
- ❑ Collaborated with volunteers to develop and deliver educational activities, inspiring youth from underrepresented groups to explore careers in biotechnology

Casa do Caminho   Jun 2013 - Dec 2013
STEM Educator   Xerém, Brazil
- ❑ Designed and implemented STEM education initiatives, leveraging limited resources to expose youth and community members to subjects not otherwise taught in the local region

OPEN SOURCE PROJECTS

Cellranger Pipeline | *Primary Contributor* | *AWS, Python, Bash*   **GitHub**
A cloud-based deployment of the 10x Genomics Cell Ranger software
- ❑ Migrated genomics data processing pipeline from HPC to AWS Batch, streamlining user workflow
- ❑ Reduced hands-on time by 71% with automation and decreased pipeline runtime by 52% with dedicated resource allocation
- ❑ Implemented infrastructure management via Terraform, providing an efficient and reproducible means to change and version infrastructure
- ❑ Packaged scripts and 3rd-party dependencies into Docker images in order to create and distribute consistent runtime environments

cytutils | *Major Contributor* | *R, Shiny*   **GitHub**
A package for cytometry quality control and reproducibility utilities
- ❑ Created GUI including interactive data visualization to provide an enhanced user experience and increased transparency for researchers performing QC on cytometry data via the provided algorithms

(Re)Mission Possible | *Sole Developer* | *JavaScript, Easel.js*   **Live** | **GitHub**
A browser-based antibody-flinging, cancer butt-kicking game
- ❑ Leveraged the Easel.js library and the attributes of its shape class in order to provide accurate collision detection, enhancing the UX

PUBLICATIONS

- ❑ Lee, B. H., Kelly, G., Bradford, S., **Davila, M.**, Guo, X., Amir, E. D., et al., (2019). A Modified Injector and Sample Acquisition Protocol Can Improve Data Quality and Reduce Inter-Instrument Variability of the Helios Mass Cytometer. BioRxiv. doi:10.1101/600130
- ❑ Perekatt, A.O, Valdez, M.J., **Davila, M.**, Hoffman, A., Bonder, E.M., Gao, N., & Verzi, M.P. (2014). YY1 is indispensable for Lgr5+ stem cell renewal. *Proceedings of the National Academy of Sciences*, *111*(21) 7695-7700.
- ❑ **Davila, M.** (2011). The incomprehensible nature of the origin of life. *Dialogues@RU*, *7*, 69-81.