# Marc D. Berliner, Ph.D.

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## Education

**Massachusetts Institute of Technology**, *Ph.D. in Chemical Engineering* — *Cambridge, MA*

**Massachusetts Institute of Technology**, *M.S. in Chemical Engineering Practice* — *Cambridge, MA*

**Florida State University**, *B.S. in Chemical Engineering, summa cum laude* — *Tallahassee, FL*

## Work and Research Experience

**JuliaHub, Inc.**  **Nov. 2022 – Present**

*JuliaSim Batteries Lead Developer*  *Cambridge, MA*

- Spearheading development for JuliaSim Batteries, a high-performance simulator for Doyle-Fuller-Newman (DFN) and Single-Particle models in lithium-ion cells and packs containing 1000s of cells
- Acting as the primary battery expert at JuliaHub for all aspects of sales, marketing, and technical roadmapping of JuliaSim Batteries
- Hosting webinars for battery experts, leading sales calls with clients, and collaborating with product and frontend teams to design a no-code graphical user interface (GUI)
- Combining machine learning with traditional physics-based models to learn new behavior from data, such as low-temperature performance and long-term degradation
- Optimizing code to simulate a cell's lifetime of 500 cycles in under 1 minute with the DFN model
- Predicting lifetime variability due to manufacturing defects with fast-charging

**MIT Department of Chemical Engineering**  **Sep. 2018 – Nov. 2022**

*Graduate Researcher with Professor Richard D. Braatz*  *Cambridge, MA*

- Designed optimal charging algorithms for batteries with physics-based models in real-time
- Used Bayesian methods to analyze uniqueness of battery parameters from experimental discharge data
- Applied machine learning to classify battery lifetime with acoustic measurements

## Software Development

**PETLION: Porous Electrode Theory for Li-ion Batteries**  **Sep. 2020 – Nov. 2022**

*Developer*  [github.com/MarcBerliner/PETLION.jl](github.com/MarcBerliner/PETLION.jl)

- Published a high-performance implementation of the DFN model in Julia (100x faster than alternatives)

## Peer-Reviewed Publications

- **6 first-author** publications and **12 total** publications on lithium-ion batteries
- 350+ citations, h-index of 8, i10-index of 6

## Technical Skills

**Languages:** Julia, Python, MATLAB, C++, GAMS

**Software:** Aspen Plus, JuliaSim, MS Office Suite, LaTeX, EC-Lab, Adobe Photoshop

## Honors and Awards

Robert T. Haslam MIT Chemical Engineering Fellowship  **2018**

Florida Bright Futures Academic Scholars Award  **2014 − 2018**