

Tim Farrell

Biomedical
Data Engineer/
Manager

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Summary

Engineer with 5+ years experience developing data systems and using data science to address biomedical problems. Operator with management experience in both military and civilian organizations. Motivated, organized and results-obsessed.

Experience

Day Zero Diagnostics, Inc. / Boston MA

Manager, Bioinformatics Data Engineering / June 2020 - Present

Bioinformatics Engineer / May 2019 - June 2020

Develop data pipelines/ products for genomics + ML-based diagnostics. Manage program for sourcing [data from different sources/partners](#) (~1-2k samples per quarter, 40k+ total) to support AI/ ML model development. Oversee/ supervise clinical-grade workflow that supports CLIA-validated service. Migrated systems to cloud-native data architecture.

The Broad Institute of MIT and Harvard / Assoc. Computational Biologist

May 2017 - June 2019, Cambridge MA

Developed pipeline to predict new infection events on a large set (60k+) of longitudinal NGS samples from malaria vaccine clinical trial. Developed [3 cloud-native genomic analysis pipelines](#), which processed ~100-300 parasite/ vector genomes per month.

Harvard Medical School / Biomedical Informatics Intern

Aug 2015 - May 2016, Boston MA

In collaboration with a pathologist at BWH, developed a [genomics-based classifier](#) for predicting blood antigenic phenotypes from NGS + 3GS technologies.

Boston University / Research Assistant

Aug 2015 - May 2016, Boston MA

Built [pre-processing pipeline](#) for fMRI connectivity study of Human Connectome data.

New England Biolabs / Bioinformatics Intern

May 2015 - Aug 2015, Boston MA

Worked to develop error mitigation applications for NGS + 3GS technologies. Implemented and operated sequencing + computational workflows.

US Army Reserve / Operations Officer

May 2012 - March 2021, Taunton MA

Part-time (2-4 days per month + 2-4 weeks per year) military leader. Activated for [DoD COVID-19 response](#) (Apr - Jun 2020) and deployed overseas (May 2016 - 2017). Managed operations of ~80-100-soldier orgs in dynamic, mission-driven environments.

Education

Boston University / Master of Science, Bioinformatics

Sept 2014 - May 2016, Boston MA

Project: Clinical sequencing antigenic classifier for structurally-variant genotypes

Activities: West End House STEM Tutor program

GPA: 3.02 / 4.0

Rutgers University / Bachelor of Science, Biomedical Engineering

Sept 2008 - May 2012, New Brunswick NJ

Project: Optimization of localizable stem cell-based immunotherapeutic

Activities: Army ROTC, Rutgers Rugby Football Club

GPA: 3.31 / 4.0

Technical Skills

Languages: Python, SQL, shell, R, Javascript, Java, Haskell

Data engineering: Postgres, MySQL, alembic, Prefect, BigQuery, Metabase, GraphQL

Software development: git, docker, Jira, GCP, APIs, Flask/ Django, CircleCI, Kubernetes

Data science: PyData stack (pandas, seaborn, numpy/ scipy), scikit-learn, jupyter, keras

Bioinformatics: biopython, pysam, pyvcf, (sam|bed|vcf)tools, bwa, GATK, WDL, Nextflow

Genomics: variant-calling, haplotype calling, kmers, assembly, WGS, amplicons

Publications/

Posters

Farrell T.M., Sater M., et al (2020, Dec 7 - 11). epiXact: Rapid, precise and robust bacterial relatedness and outbreak detection from WGS data [Conference poster].

ASM Conference on Rapid Microbial Next Generation Sequencing and

Bioinformatic Pipelines (Virtual). [Google Drive link](#)

Early A.M., Daniels R.F., **Farrell T.M.**, et al. Detection of low-density *Plasmodium falciparum* infections using amplicon deep sequencing. *Malar J* 18, 219 (2019).

<https://doi.org/10.1186/s12936-019-2856-1>.

Farrell T.M., Early A.M., et al (2018, Oct 28 - Nov 1). Evaluating amplicon sequencing tools on mock complex *P. falciparum* infections [Conference poster].

ASTMH 2018, New Orleans, LA USA.

http://tmfarrell.github.io/astmh_2018_poster.pdf