Tim Farrell

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Summary

- Engineer with MS in Bioinformatics and 2 yrs. experience developing/ deploying data management and analysis software in biomedical/ clinical/ biotech settings.
- Self-motivated, results-focused and committed to quality.

Education

Master of Science, Bioinformatics, Boston University, 2014-2016
Project: *Clinical sequencing classifier for structurally-variant phenotypes*
Activities: West End Boys and Girls Club STEM Tutor
GPA: 3.02/ 4.0

Bachelor of Science, Biomedical Engineering, Rutgers University, 2008-2012
Project: *Optimization of localizable stem-cell immunotherapeutic*
Activities: Army ROTC, Rutgers Future Scholars Mentorship Program
GPA: 3.31/ 4.0

Experience

Research Assistant, Boston University, 2015-2016
Quantitative Neuroscience Lab, Dept. of Health Sciences
- Built pre-processing and preliminary analysis pipeline for dynamic functional connectivity study of Human Connectome Project data. Repository.
- Resulting pipeline processed 2000 2GB images in under 6 hours on HPC cluster.

Biomedical Informatics Intern, Harvard Medical School, 2015-2016
Laboratory of Personalized Medicine, Dept. of Biomedical Informatics
- Engineered genomics-based classifier for blood antigen haplotypes, using NGS/ 3GS technologies, in collaboration with Bill Lane, MD PhD (Pathology, Brigham and Women's Hospital).
- Most performant classifier achieved 81% accuracy for composite antigenic phenotype prediction.

Bioinformatics Intern, New England Biolabs, 2015
Genomic Research Divison
- Investigated error mitigation applications for third-generation sequencing (3GS) tech.
- Implemented, streamlined and executed sequencing and computational workflows.

Research Assistant, Boston University School of Medicine, 2014-2016
Primate Circadian Rhythm Lab, Dept. of Anatomy and Neurobiology
- Automated data recording, management and analysis infrastructure for 24-primate study, replacing spreadsheet-based setup with a database. Repository.
- Reduced raw data footprint by 125 times and simplified automatic data reporting with SQL.

Clinical Information Manager, ScribeAmerica, 2012-2013
Emergency Dept., St. Mary's Medical Center
- Collected, processed and organized patient clinical information in EMR under fast-paced emergent conditions.

Student-Researcher, Rutgers University, 2011-2012
Dept. of Biomedical Engineering
- Worked to optimize immunomodulatory functionality of stem cell-based therapeutic, designed to treat localized inflammatory disease.

PROJECTS

Clinical sequencing classifier for antigenic phenotypes, Sept - Dec 2015
BE562 Computational Biology

- Engineered a NGS-data classifier of Rh antigen phenotypes for automated genomics-based diagnostics. Repository.
- Methods: genomic position-frequency matrix, feature engineering, decision-tree classifier
- Technologies: Python, Illumina MiSeq data, pysam, scikit-learn

G-casual gene-protein networks, Mar - May 2016
BE571 Dynamics and Evolution of Biological Networks

- Replicated and expanded upon a study modeling the relationship between mRNA and protein expression profiles. Repository.
- Methods: Kolmogorov-Smirnov test, Wilcox test, Granger causality
- Technologies: R, Bioconductor, Gene Expression Omnibus (mRNA + protein expression)

ShowtimeApp, Mar - May 2015
EC327 Intro to Software Engineering

- Built backend (database querying over network, data parsing and local data storage) for simple TV showtime lookup application. Worked in team of 4. Repository.
- Technologies: Java, Android, SQLite

Photoshare, Mar - May 2015
CS660 Databases

- Built simple photosharing web application. Repository.
- Technologies: Java, JavaServer Pages, PostgresSQL

SKILLS

Laboratory: genomic library prep, sequencing, PCR, ELISA, confocal microscopy

Bioinformatics: standard tools (samtools, Bioconductor, etc.), NGS/ Oxford Nanopore experiment design/ data analysis, pipeline development/ management

Math/Stats/CS: descriptive/ inferential stats, algorithms/ data structures, probabilistic graphs, machine learning, graph theory, time series, casual modeling (some)

Programming:

Data management: SQL, PostgresSQL, SQLite

Operating systems: Unix-like (preferred), Windows

Data analytics: R/ ggplot, pandas/ matplotlib/ scikit-learn, MATLAB, high-performance

Languages: Python, shell, Java, C/C++, Haskell/ ML (some), Javascript HTML/ CSS (some)

LEADERSHIP

Engineer Officer, US Army Reserves, 2014-2017
368th Engineer Battalion, Londonderry, NH

- Platoon Leader for 20-Soldier Engineer Company from 2013-15.
- Executive Officer for 80-Soldier Battalion HQ Company during 1-year overseas tour 2016-2017.
- Planned and led unit operations/ logistics, designed policy and supervised subordinate leaders.

Medical Operations Officer, US Army National Guard, 2012-2014
1-114th Infantry Battalion, Blackwood, NJ

- Medical Operations Officer for 400-Soldier Infantry Battalion. Platoon Leader of 20 combat medics.
- Managed medical readiness for the battalion. Planned, led and supervised unit medical operations.