Marcus William Fedarko

Contact

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Education

Ph.D. Student, Computer Science — 9/2018–Present
University of California, San Diego — San Diego, CA
GPA: 3.52/4.0

B.S. with High Honors, Computer Science — 9/2014–5/2018
University of Maryland — College Park, MD
GPA: 3.81/4.0

Refereed Publications

6. Cantrell K*, **Fedarko MW***, Rahman G, McDonald D, Yang Y, Zaw T, Gonzalez A, Janssen S, Estaki M, Haiminen N, Beck KL, Zhu Q, Sayyari E, Morton JT, Armstrong G, Tripathi A, Gauglitz JM, Marotz C, Matteson NL, Martino C, Sanders JG, Carrieri AP, Song SJ, Swafford AD, Dorrestein PC, Andersen KG, Parida L, Kim H-C, Vázquez-Baeza Y, and Knight R (2021). "EMPress Enables Tree-Guided, Interactive, and Exploratory Analyses of Multi-omic Data Sets." *mSystems, 6*(2):e01216-20. (* = contributed equally)
5. Huey SL, Jiang L, **Fedarko MW**, McDonald D, Martino C, Ali F, Russell DG, Udipi SA, Thorat A, Thakker V, Ghugre P, Potdar RD, Chopra H, Rajagopalan K, Haas JD, Finkelstein JL, Knight R, and Mehta S (2020). "Nutrition and the Gut Microbiota in 10- to 18-Month-Old Children Living in Urban Slums of Mumbai, India." *mSphere, 5*(5):e00731-20.
4. **Fedarko MW**, Martino C, Morton JT, González A, Rahman G, Marotz CA, Minich JJ, Allen EA, and Knight R (2020). "Visualizing 'omic feature rankings and log-ratios using Qurro." *NAR Genomics and Bioinformatics, 2*(2):lqaa023.
3. Sanders JG, Nurk S, Salido RA, Minich J, Xu ZZ, Martino C, **Fedarko M**, Arthur TD, Chen F, Boland BS, Humphrey GC, Brennan C, Sanders K, Gaffney J, Jepsen K, Khosroheidari M, Green C, Liyange M, Dang JW, Phelan VV, Quinn RA, Bankevich A, Chang JT, Rana TM, Conrad DJ, Sandborn WJ, Smarr L, Dorrestein PC, Pevzner PA, and Knight R (2019). "Optimizing sequencing protocols for leaderboard metagenomics by combining long and short reads." *Genome Biology, 20*(1):226.
2. Ghurye J, Treangen T, **Fedarko M**, Hervey WJ, and Pop M (2019). "MetaCarvel: linking assembly graph motifs to biological variants." *Genome Biology, 20*(1):174.
1. Meisel JS, Nasko DJ, Brubach B, Cepeda-Espinoza V, Chopyk J, Corrada-Bravo H, **Fedarko M**, Ghurye J, Javkar K, Olson ND, Shah N, Allard SM, Bazinet AL, Bergman NH, Brown A, Caporaso JG, Conlan S, DiRuggiero J, Forry SP, Hasan NA, Kralj J, Luethy PM, Milton DK, Ondov BD, Preheim S, Ratnayake S, Rogers SM, Rosovitz MJ, Sakowski EG, Schliebs NO, Sommer DD, Ternus KL, Uritskiy G, Zhang SX, Pop M, and Treangen TJ (2018). "Current progress and future opportunities in applications of bioinformatics for biodefense and pathogen detection: Report from the Winter Mid-Atlantic Microbiome Meet-up, College Park, MD January 10th, 2018." *Microbiome, 6*(1):197.

Outreach Presentations

2. "Visualizing, Exploring, and Understanding Microbiome Sequencing Data." UC San Diego CSE Research Open House, 1/2020.
1. "Visualizing Metagenomic Assembly Graphs, Doing Undergrad Research at UMD, Applying to Grad Schools, and probably other stuff along the way." Guest talk for CMSC 396H (U. of Maryland undergraduate honors seminar), 4/2018.

Service

4. Mentor, UC San Diego GradWIC mentorship program — 10/2021–Present
3. Moderator, QIIME 2 forum (`https://forum.qiime2.org`) — 3/2020–Present
2. Co-organizer, UC San Diego CSE Visit Day — 2019, 2020, 2021
1. Code Review (Co-)Organizer, Knight Lab — 12/2018–8/2020

Research Experience

Graduate Student Researcher — 9/2018–Present
University of California, San Diego — San Diego, CA

- Designing software for the analysis of metagenomic sequencing data and other forms of "'omic" data.
- Assisting with various software and analysis projects.

Research Intern — 6/2016–8/2018
University of Maryland — College Park, MD

- Designed MetagenomeScope, an interactive visualization tool for metagenome assembly graphs: see `https://marbl.github.io/MetagenomeScope`.

Teaching Experience

Teaching Assistant — 1/2021–3/2021
University of California, San Diego — San Diego, CA

- **Course:** CSE 282 ("Introduction to Bioinformatics Algorithms / Molecular Sequence Analysis")
- Fielded questions from students over email and in office hours.
- Managed various details of the course, including a Canvas page, Stepik interactive textbook, a class website, and a weekly survey system.
- Assisted with designing and grading certain assignments.

Course Assistant — 7/2018–8/2018
Marine Biological Laboratory — Woods Hole, MA

- **Courses:** Workshop on Molecular Evolution (MOLE); Strategies and Techniques for Analyzing Microbial Population Structures (STAMPS)
- Assisted with basic logistics for both courses (i.e. mostly making coffee).
- Helped students during some of the "laboratory" sections of the STAMPS course, including tutorials on Unix and Git.
- Prepared and gave a roughly hour-long presentation (including a tutorial) on MetagenomeScope during the STAMPS course as part of Todd Treangen's session on "Graph-based variant detection and strain-level analyses."

Teaching Assistant — 8/2016–12/2016
University of Maryland — College Park, MD

- **Course:** CMSC 330 ("Organization of Programming Languages")
- Assisted students with coursework (Ruby, OCaml, Prolog; grammars, regular languages, semantics, security) in office hours and on an online discussion board.
- Designed and graded quiz and exam questions.

Professional Experience

Student Staff Writer — 1/2015–9/2017
University of Maryland Dept. of Computer Science — College Park, MD

- Composed and edited articles for the department's website and other media.
- Assisted with the logistics of various department outreach functions.

Student Intern — 5/2013–8/2014
Axiometric — Columbia, MD

- Designed a graphical interface to an RF propagation model to assist clients in planning deployments of mesh networks of utility meters.
- Aided in the creation and maintenance of other utility meter deployment management software.

Intern Software Engineer — 7/2012–8/2012
Battlefield Telecommunications Systems — Columbia, MD

- Designed a web interface to monitor the connection strength of radio devices.
- Helped integrate this functionality into the company's existing network management user interface.

Honors and Awards

9. University of Maryland CMNS Dean's List — Fall 2014–Spr. 2018
8. University of Maryland Honors College University Honors Citation — 2017
7. Rita Colwell Travel Fellowship — 2017
6. Travel Award, U. of Michigan "Explore Graduate Studies" Workshop — 2017
5. John D. Gannon Endowed Scholarship — 2017
4. Corporate Partners in Computing Scholarship — 2016, 2017
3. Omicron Delta Kappa National Leadership Honor Society — 2016
2. Northrop Grumman Scholarship for Employees' Children — 2014
1. University of Maryland Dean's Scholarship — 2014