BEGÜM D. TOPÇUOĞLU

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OBJECTIVE

Integrate data science and biology to improve human health

SKILLS

Python, R, Git, Bash, Docker, Jenkins, Nextflow, sklearn, PyTorch, multi-omics data analysis

QUALIFICATION SUMMARY

- **PhD level bioinformatician with a background in microbial ecology. Expertise in analyzing wide range of research data and computational pipeline development.**
  - Programming languages: Python, R.
  - Computer platforms and applications: Linux-based HPC, AWS and Galaxy platforms, Jenkins, Docker, Nextflow
  - Bioinformatic tools: mothur, BBMap, STAR, DESeq2, Bowtie,
- **Bioinformatics accomplishments:**
  - Developed a machine learning pipeline for microbiome-based classification problems.
    - ML Tools: sklearn, PyTorch, caret.
  - Curated, managed and analyzed metagenomics, 16S rRNA gene sequence and transcriptomic data.
- **Strong communication and collaboration skills.**
  - Science Communication Fellow at University of Michigan Museum of Natural History.
  - Software Carpentry Instructor.
- Experience with collaborating on Github and Bitbucket for computational projects and R package development.

EDUCATION

DOCTOR OF PHILOSOPHY **2012 - 2018**
UNIVERSITY OF MASSACHUSETTS
Curtis B. Thorne Outstanding Graduate Student Award
American Geophysical Union Outstanding Student Paper Award

BACHELOR OF SCIENCE **2007-2011**
SABANCI UNIVERSITY

SELECTED PUBLICATIONS (TOTAL 10)

- **Topçuoğlu, BD**., Lesniak NA, IV Ruffin MT, Wiens, J, Schloss PD. (2019) *A Framework for Effective Application of Machine Learning to Microbiome-Based Classification Problems*. mBio, 11: 1-13.
- **Topçuoğlu, BD**, Lapp Z, Sovacool K, Wiens, J, Schloss PD. (in prep). *mikRopML: User-Friendly Machine Learning Package for Binary Classification Problems. JOSS*

REFERENCES

Patrick Schloss
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EXPERIENCE

UNIVERSITY OF MICHIGAN **2020 - PRESENT**
SENIOR COMPUTATIONAL BIOLOGIST
Research Area: Bioinformatics and Human Microbiome
Skills Acquired: Developed pipelines using Docker, Singularity, Nextflow. Coordinated efforts between the project teams and IT groups.
Projects: Analyzed multi-omics datasets for therapeutic purposes.
Publications: 1 **International Conferences:** 1

UNIVERSITY OF MICHIGAN **2018 - 2020**
POST-DOCTORAL RESEARCH FELLOW
Research Area: Bioinformatics and GI Bacterial Microbiome
Skills Acquired: Python, R, Git, Next-gen sequencing, machine learning.
Projects: Analyzed large scale bacterial microbiome data sets for interactions with the human host. Used general statistical concepts and machine learning to early detect colorectal cancer.
Publications: 1 **International Conferences:** 1

UNIVERSITY OF MASSACHUSETTS **2012 - 2018**
PhD CANDIDATE
Research Area: Environmental Microbiology and Microbial Physiology
Skills Acquired: Metabolic network modeling, RNAseq, anaerobic culturing, chemostat growth.
Projects: Participated in oceanic expeditions and developed new methods at the bench to study subsurface microbiology, microbial physiology of extremophiles and inter-species interactions.
Publications: 8 **International Conferences:** 6

SELECTED PRESENTATIONS (TOTAL 10)

- **(Invited) Topçuoğlu BD**. How to Machine Learn. *American Society of Microbiology Annual Meeting 2020.*

LEADERSHIP AND MENTORSHIP

- Chair of Inaugural 2016 Pioneer Valley Microbiology Symposium.
- Member of Diversity, Equity, Inclusion Committee at University of Michigan *(2018-present).*