

# Taylor Petty

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## SUMMARY

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Computational statistician with five years of experience in Bayesian modeling and data science with applications in statistical genetics, transcriptomics, and the microbiome. Large-scale data projects using Python, R, and cluster computing. Clear communicator with five years of teaching experience.

## EDUCATION

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### The University of North Carolina at Chapel Hill

*Statistics and Operations Research*

Chapel Hill, NC

2018 – 2023

- Ph.D. Aug 2023, advised by Jan Hannig and Hari Iyer
- M.S. May 2021

### Brigham Young University

*Mathematics*

Provo, UT

2011 – 2015

- M.S. Aug 2015, advised by Todd Fisher
- B.S. Apr 2014 (Cum Laude)

## PROFESSIONAL EXPERIENCE

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### Statistician

*Sciome*

Durham, NC

Jul 2023 – Present

- Client-facing research consultant
- Worked with data in transcriptomics, gene epistasis, air pollution, and microbiome
- Designing algorithms at scale: multicore (SLURM), out-of-core (HDF5)

### Graduate Student Researcher

*The University of North Carolina at Chapel Hill*

Chapel Hill, NC

Aug 2018 – Aug 2023

- Modeling likelihood of multi-contributor DNA samples
- Bayes factor calculation for person of interest being present at crime scene
- Markov chain Monte Carlo, cluster computing

### Data Science Intern

*Sestina Bio*

Pleasanton, CA (Remote)

Jul – Sep 2022

- Wrote gene screening recommendation system for synthetic biology
- Combined multiple data sets into multilayer yeast genome network
- Tested network predictive power with toxin exposure data

### Research Intern

*United States Army Engineer Research and Development Center*

Vicksburg, MS

Jun – Aug 2021

- Designed and led experiment to test lidar sensors for autonomous tanks
- Wrote, fit, and analyzed logistic regression model with mixed effects
- Published results in peer-reviewed journal

### Math Instructor

*Shaw University*

Raleigh, NC

Jan 2017 – Aug 2018

- Worked with students from diverse backgrounds across the world
- Taught 5–6 classes per semester of 20–30 students each
- Co-led campus-wide math lab in Spring 2017

## TECHNICAL SKILLS

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Python (NumPy, pandas, SciPy, Numba), R (tidyverse, Bioconductor), Linux (cluster computing, SLURM), GitHub, L<sup>A</sup>T<sub>E</sub>X, C++, Mathematica, AWS, MATLAB, Base SAS 9 certification

## PUBLICATIONS

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**Taylor Petty**, Jan Hannig, and Hari Iyer. A Bayesian Approach to DNA Mixture Deconvolution With Dimension-Reduced Sequence Data. *In preparation*.

**Taylor Petty**, Juan D. Fernandez, Jason N. Fischell, and Luis A. De Jesús-Díaz. Lidar Attenuation Through a Physical Model of Grass-like Vegetation. *Journal of Autonomous Vehicles and Systems* **2022**, 2(2), 021003. doi: 10.1115/1.4055944

**Taylor Petty**, Jan Hannig, Tunde I Huszar, and Hari Iyer. A New String Edit Distance and Applications. *Algorithms* **2022**, 15(7), 242. doi: 10.3390/a15070242

Todd Fisher, **Taylor Petty**, and Sergey Tikhomirov. Nonlocally Maximal and Premaximal Hyperbolic Sets. *Contemporary Mathematics* **2017**, 692, 83 – 99. doi: 10.1090/conm/692

## AWARDS and FUNDING

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UNC Dissertation Completion Fellowship	2022 – 2023
TIBBS ImPACT Scholar	2022
UNC Summer Research Fellowship	2022
NSF grant-funded stipend	2020, 2022
NSF Mathematical Sciences Graduate Internship	2021
UNC Doctoral Merit Assistantship	2018 – 2019
The Honor Society of Phi Kappa Phi	2014
Dean's List (BYU)	2012

## SELECTED TEACHING EXPERIENCE

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**STOR 455: Methods of Data Analysis** **Chapel Hill, NC**  
*The University of North Carolina at Chapel Hill* Fall 2021

**MAT 112 & 113: General Mathematics I & II** **Raleigh, NC**  
*Shaw University* Spring 2017 – Spring 2018

**MATH 112: Calculus I** **Provo, UT**  
*Brigham Young University* Summer 2015

## LEADERSHIP and COMMUNITY

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STOR Liaison, UNC Biostatistics Student Association	2021 – 2023
STOR Representative, UNC Computational Biosciences Club	2021 – 2023
President, UNC BIOSTOR Club	2021 – 2022
◦ Organized academic and social events between STOR and BIOS departments	
BYU Math Department Student Advisory Council Member	2013 – 2015
◦ Met regularly with faculty to improve department	
◦ Helped plan and run campus-wide Pi Day events	
Three-palm Eagle Scout, Boy Scouts of America	2009
Various church leadership roles	2005 – Present