Nicholas Marco

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ndmarco.github.io

Education

2018 - 2023 **Ph.D. in Biostatistics** (University of California, Los Angeles)
GPA: 3.93
Advised by Prof. Donatello Telesca
Additional Committee Members: Damla Şentürk, Michele Guindani, Joanne Weidhaas

2014 - 2017 **B.S. in Mathematics: Option in Statistics** (California State University, Long Beach)
GPA: 4.00
Honors: Summa Cum Laude, Departmental Honors

Experience

08/2023 – Present **Postdoctoral Associate**
Duke University (Advisors: Surya Tokdar and Jennifer Groh)

Role outline

- Developed statistical methods to model neural spike train data from neurons that have simultaneous stimuli in the receptive field

01/2020 – 06/2023 **Graduate Student Researcher**
University of California, Los Angeles

Role outline

- Constructed and derived theoretical properties for mixed membership models for multivariate and functional data
- Developed an R package for fitting mixed membership models in a Bayesian framework
- Conducted a multi-channel EEG analysis on children with autism spectrum disorder (ASD) using the Hoffman2 cluster

07/2019 – 06/2023 **Graduate Student Researcher**
MiraKind (Los Angeles, CA)

Role outline

- Created microRNA-based predictive signatures for late genitourinary (GU) toxicity in various types of radiation and immunotherapy cancer treatments
- Created microRNA-based signatures for predicting progression-free survival
- Developed a python web-based application so physicians can run our late GU toxicity signature for patients in a phase II clinical trial

07/2019 – 12/2019 **Graduate Student Researcher**
Lucid Circuit (Santa Monica, CA)

Role outline

- Constructed an algorithm in Julia to detect six different types of cardiac rhythms based off of data from two ECG leads
- Achieved a mean accuracy of 95.1% using 3-fold cross-validation, compared to a current ICU false alarm rate of up to 86%

04/2019 – 07/2019 **Graduate Student Researcher**
Amgen (Thousand Oaks, CA)

Role outline

- Created an R shiny package for Bayesian clinical trial simulations using power priors
- Allowed researchers to visualize the power of a clinical trial under different historical clinical trials, treatment effects, sample sizes, and prior hyperparameters

09/2018 – 06/2019 **Teaching Assistant**
University of California, Los Angeles

Role outline

- Organized weekly activity sessions for an introductory biostatistics course
- Held weekly office hours and graded assignments

01/2018 – 08/2018 **Systems Engineer**
Northrop Grumman Corporation (Redondo Beach, CA)

Role outline

- Developed and maintained an internal hazard tracking system
- Participated in requirement reviews, code reviews, unit testing, and field testing of software
- Documented safety mitigations implemented to ensure compliance with MIL-STD-882E

10/2017 – 01/2018 **Research Assistant**
California State University, Long Beach

Role outline

- Developed a convolutional neural network (CNN) using Pytorch to predict the spread of wildfires
- Data was provided by the National Forest Services and funding was provided by the National Science Foundation

05/2017 – 07/2017 **Software Engineer Intern**
Northrop Grumman Corporation (Redondo Beach, CA)

Role outline

- Developed an algorithm to systematically conduct trade studies (MATLAB)
- Assisted in the software development of a graphical user interface (GUI) for the application (Java)

Publications/ Preprints

- **Marco, N.**, Şentürk, D., Jeste, S., DiStefano, C., Dickinson, A., & Telesca, D. (2024+). Covariate Adjusted Functional Mixed Membership Models. (in preparation)
- **Marco, N.**, Şentürk, D., Jeste, S., DiStefano, C., Dickinson, A., & Telesca, D. (2024+). Flexible Regularized Estimation in High-Dimensional Mixed Membership Models. (submitted)
- Shamshoian, J., **Marco, N.**, Şentürk, D., & Telesca, D. (2024+). Bayesian Covariance Regression in Functional Data Analysis with Applications to Functional Brain Imaging. (submitted)
- **Marco, N.**, Şentürk, D., Jeste, S., DiStefano, C., Dickinson, A. and Telesca, D., 2024. Functional Mixed Membership Models. Journal of Computational and Graphical Statistics, (just-accepted), pp.1-18.
- Weidhaas, J.B., **Marco, N.**, Steinberg, M.L., Lee, A., Xiang, M., Valle, L.F., Casado, M., Stube, A., Telesca, D. and Kishan, A.U., 2023. Early findings from the GARUDA trial: The impact of a genetic signature of late radiation toxicity on prostate cancer treatment decision making.
- Kishan, A.U., **Marco, N.**, Ma, T.M., Steinberg, M.L., Sachdeva, A., Cao, M., Ballas, L.K., Rietdorf, E., Telesca, D. and Weidhaas, J.B., 2023. Application of a genetic signature of late GU toxicity in SCIMITAR, a Post-op SBRT trial. Clinical and Translational Radiation Oncology, 39, p.100594.
- Gunatilaka, A. B., **Marco, N.**, Read, G. H., Sweeney, M., Regan, G., Tsang, C., ... & Weidhaas, J. B. (2022). Viral burden and clearance in asymptomatic COVID-19 Patients. In Open forum infectious diseases (Vol. 9, No. 5, p. ofac126). US: Oxford University Press.
- Weidhaas, J., **Marco, N.**, Scheffler, A. W., Kalbasi, A., Wilenius, K., Rietdorf, E., ... & Telesca, D. (2022). Germline biomarkers predict toxicity to anti-PD1/PDL1 checkpoint therapy. Journal for immunotherapy of cancer, 10(2).
- Kishan, A. U., **Marco, N.**, Schulz-Jaavall, M. B., Steinberg, M. L., Tran, P. T., Juarez, J. E., ... & Weidhaas, J. B. (2022). Germline variants disrupting microRNAs predict long-term genitourinary toxicity after prostate cancer radiation. Radiotherapy and Oncology, 167, 226-232.

Presentations

- Functional Mixed Membership Models, **invited talk**, California State University, Long Beach Math Colloquium, Long Beach, CA, USA, March 2023

- Functional Partial Membership Models, **joint invited talk with Donatello Telesca**, O'Bayes 2022: Objective Bayes Methodology Conference, Santa Cruz, CA, USA, September 2022
- Functional Partial Membership Models, **poster**, O'Bayes 2022: Objective Bayes Methodology Conference, Santa Cruz, CA, USA, September 2022 (**poster award**)
- Bayesian Functional Partial Membership Models, **contributed presentation**, Joint Statistical Meetings, Washington D.C., USA, August, 2022
- Bayesian Functional Partial Membership Models, **poster**, 2022 ISBA World Meeting, Montreal, Canada, June, 2022 (**junior travel award**)

Technical Skills

- **Programming Languages**: R, RCPP, Julia, Python, SQL
- **Operating systems**: Linux, macOS, Windows