Charles Margossian

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Education

2017–present	**Ph.D. Statistics**, *Columbia University*, New York, NY. Advisor: Andrew Gelman
2011–2015	**B.Sci. Physics (intensive track)**, *Yale University*, New Haven, CT.
2009–2011	**Baccalauréat Scientifique**, *Ecole Jeannine Manuel (High school)*, Paris, France, Mention *très bien*.

Experience

Summer 2021	**Research Intern**, *Google*, Bayesflow team, New York, NY.
Summer 2019	**Visiting Doctoral Student**, *Aalto University, Department of Computer Science*, Probabilistic Machine Learning group, Espoo, Finland.
2016–present	**Core Developer**, *Stan Development Team*.
2016–2017	**Visiting Scientist**, *Metrum Research Group LLC*, Cambridge, MA.
2015–2016	**Pharmacometrics Bootcamp**, *Metrum Research Group LLC*, Tariffville, CT.
2013–2015	**Researcher**, *Yale Department of Astronomy*, New Haven, CT.
Summer 2014	**Patent Law, Technical Specialist**, *Leinweber und Zimmermann*, Munich, Germany.

Awards

2017	**Dean's Fellowship**, *Columbia Department of Statistics*.
2010	**Yale Book Award**.

Academic service

2020	**Reviewer**, *Neural information processing systems (NeurIPS)*.
2019	**Reviewer**, *Journal of pharmacokinetics and pharmacodynamics*.
2019 - 2020	**Student representative**, *PhD program in statistics at Columbia University*.

Skills

Progamming: R, C++, Stan, LaTeX, GitHub, Python
Languages: English, French, German

Preprints

[1] Andrew Gelman, Aki Vehtari, Daniel Simpson, Charles C Margossian, Bob Carpenter, Yuling Yao, Lauren Kennedy, Jonah Gabry, Paul-Christian Bürkner, and Martin Modrák. Bayesian Workflow. *arXiv:2011.01808*, October 2020.

[2] Michael Betancourt, Charles C Margossian, and Vianey Leos-Barajas. The Discrete Adjoint Method: Efficient Derivatives for Functions of Discrete Sequences. *arXiv:2002.00326*, February 2020.

Publications

[1] Charles C Margossian, Lu Zhang, Sebastian Weber, and Andrew Gelman. Solving ODEs in a Bayesian context: challenges and opportunities. In *Population Approach Group in Europe*, September 2021.

[2] Léo Grinsztajn, Elizaveta Semenova, Charles C Margossian, and Julien Riou. Bayesian workflow for disease transmission modeling in Stan. *Statistics in Medicine*, page to appear, May 2021.

[3] Charles C Margossian, Aki Vehtari, Daniel Simpson, and Raj Agrawal. Hamiltonian Monte Carlo using an adjoint-differentiated Laplace approximation: Bayesian inference for latent Gaussian models and beyond. *Advances in Neural Information Processing Systems (NeurIPS)*, 33:to appear, October 2020.

[4] Charles C Margossian, Aki Vehtari, Daniel Simpson, and Raj Agrawal. Approximate Bayesian inference for latent Gaussian models in Stan. In *StanCon 2020*, August 2020.

[5] Anthony Hauser, Michel J Counotte, Charles C Margossian, Garyfallos Konstantinoudis, Nicola Low, Christian L Althaus, and Julien Riou. Estimation of SARS-CoV-2 mortality during the early stages of an epidemic: a modeling study in Hubei, China and six regions in Europe. *PLOS Medicine*, 17, July 2020.

[6] Charles C Margossian. A Review of automatic differentiation and its efficient implementation. *Wiley interdisciplinary reviews: data mining and knowledge discovery*, 9, March 2019.

[7] Charles C Margossian. Computing Steady States with Stan's Nonlinear Algebraic Solver. In *StanCon 2018*, January 2018.

[8] Charles C Margossian and William R Gillespie. Gaining Efficiency by Combining Analytical and Numerical Methods to Solve ODEs: Implementation in Stan and Application to Bayesian PK/PD. *Journal of Pharmacokinetics and Pharmacodynamics*, 44, October 2017.

[9] Charles C Margossian and William R Gillespie. Differential Equation Based Models in Stan. In *StanCon 2017*, January 2017.

[10] Charles C Margossian and William R Gillespie. Stan Functions for Pharmacometrics Modeling. *Journal of Pharmacokinetics and Pharmacodynamics*, 43, October 2016.

[11] Joseph R Schmitt, Eric Agol, Katherine M Deck, Leslie A Rogers, J Zachary Gazak, Debra A Fischer, Ji Wang, Matthew J Holman, Kian J Jek, Charles Margossian, Mark R Omohundor, Troy Winarski, John M Brewer, Matthew J Giguere, Chris Lintott, Stuart Lynn, Michael Parrish, Kevin Schawinski, Megan E Schwamb, Robert Simpson, and Arfon M Smith. Planet Hunters. VII. Discovery of a new low-mass, low-density planet (PH3 C) orbiting KEPLER-289 with mass measurements of two additional Planets (PH3 B and D). *Astrophysical Journal*, 795(2), October 2014.

Softwares

[1] Stan Development Team. *Stan: A Probabilistic Programing Language*. mc-stan.org.

[2] Charles C Margossian, William R Gillespie, and Yi Zhang. *Torsten: A Bayesian Pharmacometrics Model Library for Stan*. Metrum Research Group, https://github.com/metrumrg/example-models.

[3] Kyle T Baron, Alan C Hindmarsh, Linda R Petzold, William R Gillespie, Charles C Margossian, and Devin Pastoor. *mrgsolve: Simulation from ODE-Based Population PK/PD and System Pharmacology Models*. Metrum Research Group, https://mrgsolve.github.io/.

Teaching experience (selected)

March 2020, March 2019	**Instructor**, *Building, fitting, and criticizing Bayesian PK/PD models*, (one day workshop), University of Buffalo, School of Pharmacy, Buffalo, NY.
Feb 2020, January 2019	**Instructor**, *Stan for the people: two days introductory workshop on Bayesian modeling*, McGill University, Montreal, Canada.
August 2019	**Co-instructor**, *Population and ODE-based models using Stan and Torsten*, (two days workshop), Stan Conference 2019, Cambridge, UK.
January 2018	**Instructor**, *How to Develop for the Stan C++ Core Language*, Stan Conference 2018, Pacific Grove, CA.
April 2017	**Invited Lecturer**, *Introduction to Bayesian Data Analysis with Stan*, Harvard University, STAT 220: Bayesian Statistics, Cambridge, MA.

Fall 2020	**Teacher Assistant**, *Foundation of Graphical Models, STAT 6701 (PhD level)*, Columbia University, New York, NY.
September 2017	**Teacher Assistant**, *Stan for Physics*, Massachusetts Institute of Technology, Cambridge, MA.
June 2017	**Teacher Assistant**, *Getting Started with Bayesian PKPD Modeling using Stan and Torsten*, Population Approach Group in Europe 26, Budapest, Hungary.

Presentations (selected)

March 2021	**Bayesian inference for latent Gaussian models: MCMC, approximate methods, and hybrids**, Minghui Yu memorial conference, Columbia University.
November 2020	**Developing a Bayesian modeling workflow for population PBPK**, American Conference on Pharmacomertrics, virtual.
August 2020	**Approximate Bayesian inference for latent Gaussian models in Stan**, Stan Conference 2020, virtual.
June 2020	**Developing a Bayesian workflow to model the Covid-19 outbreak**, 12th Covid-19 symposium, Columbia University, New York, NY.
July 2018	**Understanding automatic differentiation to improve performance**, Stan for Pharmacometrics Day 2018, Université Paris Diderot, School of Medicine, Paris, France.
November 2016	**Differential equations based models in Stan**, *Stan Meetup in Boston*, Harvard University, Cambridge, MA.
February 2016	**Practice (and malpractices!) of Bayesian analysis**, *Metrum Journal Minute*, Tariffville, CT.
March 2015	**How stars and planets Interact: testing the effects of close-in giant planets on stellar magnetic activity**, *Davenport Mellon Forum*, Yale University, New Haven, CT.

Modified July 2021