Charles Margossian

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Education

2017–present	**Ph.D. Statistics**, *Columbia University*, New York, NY.
2017–2020	**M.Phil. Statistics**, *Columbia University*, New York, NY.
2017–2019	**M.A. Statistics**, *Columbia University*, New York, NY.
2011–2015	**B.Sci. Physics (intensive track)**, *Yale University*, New Haven, CT.
2009–2011	**Baccalauréat Scientifique**, *Ecole Jeanine Manuel (High school)*, Paris, France, Mention *très bien*.

Experience

Summer 2019	**Visiting Doctoral Student**, *Aalto University, Department of Computer Science*, Probabilistic Machine Learning group, Helsinki, 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

Peer reviewer for the *Journal of pharmacokinetics and pharmacodynamics*.
Student representative for the PhD program in statistics at Columbia University.

Teaching Experience

March 2020, March 2019	**Instructor**, *Building, fitting, and criticizing Bayesian PK/PD models*, (one day workshop), University of Buffalo, School of Pharmacy, Buffalo, NY.

March 2020, **Invited Lecturer**, *Probability and Bayes*, University of Buffalo, School of Pharmacy, PHC 506: Biometry in Pharmaceutics, Buffalo, NY.
March 2019,
March 2018

Feb 2020, **Instructor**, *Stan for the people: two days introductory workshop on Bayesian modeling*, McGill University, Montreal, Canada.
January 2019

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 2019 **Teacher Assistant**, *Foundation of Graphical Models*, STAT 6701 (PhD level), Columbia University.
New York, NY

Spring 2019 **Teacher Assistant**, *Statistical inference*, STAT 4/5204, Columbia University.
New York, NY

Fall 2018 **Teacher Assistant**, *Statistical Computing and Introduction to Data Science*, STAT 4206, Columbia University.
New York, NY

Spring 2018 **Teacher Assistant**, *Bayesian Statistics*, STAT 5/5224, Columbia University.
New York, NY

Fall 2017 **Teacher Assistant**, *Linear Regression Models*, STAT 4205, Columbia University.
New York, NY

September **Teacher Assistant**, *Stan for Physics*, Massachusetts Institute of Technology, Cambridge, MA.
2017

June 2017 **Teacher Assistant**, *Getting Started with Bayesian PKPD Modeling using Stan and Torsten*, Population Approach Group in Europe 26, Budapest, Hungary.

October 2016 **Teacher Assistant**, *Getting Started with Bayesian PKPD Modeling using Stan*, American Conference on Pharmacometrics 7, Bellevue, WA.

October 2015 **Teacher Assistant**, *Getting Started with Bayesian PKPD Modeling using Stan*, American Conference on Pharmacometrics 6, Arlington, VA.

2013–2015 **Peer Tutor**, *Science, Technology, And Reasearch Scholars (STARS) program*, New Haven, CT.

Presentations

April 2020 **Laplace approximation for speeding up the computation of multilevel models**, MRP conference, Columbia University, New York, NY.

March 2020	**Building a probabilistic programming language to diagnose our inference**, Special seminar, University of Buffalo, School of Pharmacy.
July 2018	**Understanding automatic differentiation to improve performance**, Stan for Pharmacometrics Day 2018, Université Paris Diderot, School of Medicine, Paris, France.
January 2018	**Computing steady states with Stan's nonlinear algebraic solver**, Stan Conference 2018, Pacific Grove, CA.
June 2017	**L'Avenir de Stan en pharmacométrie**, Université Paris Diderot, School of Medicine, Paris, France.
January 2017	**Differential equations based models in Stan**, *Stan Conference*, Columbia University, New York, NY.
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.
June 2014	**Detecting exoplanets**, *Ecole Jeanine Manuel (High School)*, Paris, France.

Publications and Preprints

[1] Charles C Margossian, Aki Vehtari, Daniel Simpson, and Raj Agrawal. Hamiltonian Monte Carlo using an adjoint-differentiated Laplace approximation. *arXiv:2004.12550*, April 2020.

[2] 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 northern Italy. *medRxiv:2020.03.04.20031104*, 2020.

[3] Léo Grinsztajn, Elizaveta Semenova, Charles C Margossian, and Julien Riou. Bayesian workflow for disease transmission modeling in Stan. *arXiv:2006.02985*, May 2020.

[4] 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.

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

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

[7] 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.

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

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

[10] 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/.

Modified March 2020