

ALEJANDRO SCHULER

ACADEMIC APPOINTMENTS	Assistant Professor in Residence <i>UC Berkeley Division of Biostatistics</i>	<i>July 2022 to present</i>
	Postdoctoral Scholar <i>UC Berkeley Center for Targeted Machine Learning</i>	<i>Oct. 2021 to June 2022</i>
	Adjunct Professor <i>Stanford University, Dept. Biomedical Data Science</i>	<i>Feb. 2021 to Sept. 2021</i>
EDUCATION	Ph.D. Biomedical Informatics <i>Stanford University</i>	<i>Sept. 2018</i>
	M.S. Mechanical Engineering: Systems and Controls <i>University of California, Los Angeles</i>	<i>Sept. 2013</i>
	B.S. Mechanical Engineering <i>University of California, Berkeley</i>	<i>May 2012</i>
HIGHLIGHTED PUBLICATIONS <i>First Author</i>	★ Schuler, A., van der Laan, M. (2022). The Selectively Adaptive Lasso. <i>arXiv preprint</i> .	
	Schuler, A. (2021). Mixed models for repeated measures should include time-by-covariate interactions to assure power gains and robustness against dropout bias relative to complete-case ANCOVA. <i>Therapeutic Innovation & Regulatory Science</i> .	
	★ Schuler, A. (2021). Designing efficient randomized trials: power and sample size calculation when using semiparametric efficient estimators. <i>International Journal of Biostatistics</i> .	
	★ Schuler, A., Walsh, D., Hall, D., Walsh, J., Fisher, C. (2020). Increasing the efficiency of randomized trial estimates via linear adjustment for a prognostic score. <i>International Journal of Biostatistics</i> .	
	Schuler, A., O'Suilleabhain, L., Rinetti-Vargas, G., Kipinis, P., Barreda, F., Liu, V., Sofrygin, O., Escobar, G. (2020). Value of neighborhood socioeconomic status in models using EHR data to predict utilization and mortality. <i>JAMA Network Open</i> .	
	Schuler, A., Callahan, A., Jung, K., Shah, N. (2018). Performing an informatics consult: methods and challenges. <i>Journal of the American College of Radiology</i> .	
	Schuler, A., Wulf, D., Lu, Y., Iwashyna, T.J., Escobar, G.J., Shah, N., Liu, V.X. (2018). The impact of acute organ dysfunction on long-term survival in sepsis. <i>Critical Care Medicine</i> .	
	Schuler, A., Baiocchi, M., Tibshirani, R., Shah, N. (2018). A comparison of methods for model selection when estimating individual treatment effects. <i>arXiv preprint</i> .	
	Schuler, A., Jung, K., Tibshirani, R., Hastie, T., Shah, N. (2017). Synth-validation: selecting the best causal inference method for a given dataset. <i>arXiv preprint</i> .	
	Schuler, A., Liu, V., Wan, J., Callahan, A., Udell, M., Stark, D. E., Shah, N. (2016). Discovering patient phenotypes using generalized low-rank models. <i>Pacific Symposium on Biocomputing</i> .	
<i>Senior Author</i>	O'Malley, M., Sykulski, A., Lumpkin, R., Schuler, A. (2021) Multivariate Probabilistic Regression with Natural Gradient Boosting. <i>arXiv preprint</i>	
	Marafino, B., Escobar, G., Baiocchi, M., Liu, V., Plimier, C., Schuler, A. (2021). Evaluation of a readmission prevention intervention targeted with predictive analytics in an integrated health system: an observational study. <i>BMJ</i> .	
	Ward, A., Mann, A., Vallon, J., Escobar, G., Bambos, N., Schuler, A. (2021). Operationally-informed hospital-wide discharge prediction using machine learning. <i>IEEE healthcom</i> .	
	★ Duan, T., Avati, A., Ding, D., Thai, K. K., Y., Basu, S., Ng, A. Y., Schuler, A. (2020). NGBoost: natural gradient boosting for probabilistic prediction. <i>ICML</i> .	
<i>Other</i>	Lee, C., Lawson, B., Mann, A., Liu, V., Myers, L., Schuler, A., Escobar, G. (2022). Exploratory analysis of novel electronic health record variables for quantification of healthcare delivery strain, prediction of mortality,	

and prediction of imminent discharge. *JAMIA*

Walsh, D., Schuler, A., Hall, D., Walsh, J., Fisher, C. (2021). Bayesian prognostic covariate adjustment. *arXiv preprint*.

Flores, A., Schuler, A., Eberhard, A. Olin, J., Cooke, J., Leeper, N., Shah, N., Ross, E. (2021). Unsupervised learning for automated detection of coronary artery disease subgroups *J. American Heart Association*.

Liu, V. X., Bhimarao, M., Greene, J. D., Manickam, R. N., Martinez, A., Schuler, A., ... Escobar, G. J. (2021). The presentation, pace, and profile of infection and sepsis patients hospitalized through the emergency department: an exploratory analysis. *Critical care explorations*.

★ Escobar, G., Liu, V., Schuler, A., Lawson, B. Greene, J., Kipnis, P. (2020). Impact of automated early warning score predictive model on inpatient deterioration and mortality outcomes. *New England Journal of Medicine*.

Marafino, B. J., Schuler, A., Liu, V. X., Escobar, G. J., & Baiocchi, M. (2020). Predicting preventable hospital readmissions with causal machine learning. *Health Services Research*, 55(6), 993-1002.

Schuemie, M.J., Cepeda, M.S., Suchard, M.A., Yang, J., Tian, Y., Schuler, A., Ryan, P.B., Madigan, D., Hripcsak, G. (2020). How confident are we about observational findings in health care: a benchmark study. *Harvard Data Science Review*.

Adams, J.Y., Rogers, A.J., Schuler, A. Marelich, G.P., Fresco, J.M., Taylor, S.L., Riedl, A.W., Baker, J.M., Escobar, G.J., Liu, V.X. (2019). The association between S/F ratio time-at-risk and hospital mortality in mechanically ventilated patients. *The Permanente Journal*.

Vashisht, R. Jung, K., Schuler, A., Banda, J.M., Callahan, A. et al. (2018). Association of hemoglobin a1c levels with use of sulfonylureas, dipeptidyl peptidase 4 inhibitors, and thiazolidinediones in patients with type 2 diabetes treated with metformin. *JAMA Network Open*.

Wendling, T., Jung, K., Schuler, A., Callahan, A., Shah, N.H., Gallego, B. (2018). Comparing methods for estimation of heterogeneous treatment effects using observational data from healthcare databases. *Statistics in Medicine*.

Wang, J. K., Hom, J., Balasubramanian, S., Schuler, A., Shah, N. H., Goldstein, M. K., ... Chen, J. H. (2018). An evaluation of clinical order patterns machine-learned from clinician cohorts stratified by patient mortality outcomes. *Journal of Biomedical Informatics*.

★ Powers, S., Qian, J., Jung, K., Schuler, A., Shah, N. H., Hastie, T., Tibshirani, R. (2017). Some methods for heterogeneous treatment effect estimation in high-dimensions. *Statistics in Medicine*.

Richman, I. B., Fairley, M., Jorgensen, M. E., Schuler, A., Owens, D. K., & Goldhaber-Fiebert, J. D. (2016). Cost-effectiveness of intensive blood pressure management. *JAMA cardiology*.

INDUSTRY
EXPERIENCE

Statistics and Data Science Consultant

Nov. 2020 to present

I work with a number of companies to define problems and solutions in analytical domains. Clients include Unlearn.ai and Kaiser Permanente.

Biostatistician Unlearn.AI

Apr. 2020 to Aug. 2021

Responsible for research and development of statistical methods to make randomized trials more efficient by integrating models built from observational health data.

Data Scientist Kaiser Permanente Division of Research

Nov. 2018 to Apr. 2020

Equivalent to staff scientist in an academic setting. I directed statistical and computational analysis and for projects in the Systems Research Group. I also contributed to grant proposals and provided technical management and workforce development for a team of programmer-analysts.

Informatics Consultant Kaiser Permanente Division of Research

June 2016 to Oct. 2016

Engineering Consultant Global Renewable Energy Engines

Sept. 2013 to Feb. 2014

TEACHING

R for Data Science KPNC Division of Research, Stanford University

Course Designer and Lecturer

2018 to present

A tour of the R programming language through the tidyverse packages. Lecture-based with active learning exercises.

Concepts in Machine Learning with Pytorch *KPNC Division of Research*

Course Designer and Lecturer

Fall 2019

An introduction to statistical learning theory using deep learning for examples. The primary learning goal is for students to be able to discern between hypothesis spaces, loss functions, and optimization algorithms, and identify the application of these concepts in new machine learning methods. Inverted classroom design.

Data-Driven Medicine *Stanford University*

Course Designer, Lecturer, Teaching Assistant

2016 to 2018

A course in the design and execution of studies using large observational data in healthcare, targeted at advanced undergraduates and new graduate students. Lecture-based with active learning exercises, project-based homework, and journal club component. Design supported by a competitive grant through Stanford VPGE.

Program Liason *Vice Provost for Teaching and Learning*

2016 to 2018

Fostered two-way communication between the VP for Teaching and Learning and the Biomedical Informatics training program by promoting programs and resources and customizing teaching services.

Inclusive Teaching Workgroup Member *Vice Provost for Teaching and Learning*

Spring 2017

The working group collaborated to share research, resources, and personal experience relating to best practices for inclusive teaching. We created teaching guides for the VP for Teaching and Learning website and future workshops.

Consultant *Stanford Statistical Consulting Services*

Fall 2016

SOFTWARE

ngboost

A Python library that implements [Natural Gradient Boosting](#) (see paper above). This package has over a thousand stars on github and is used by, among others, the data journalism team at The Economist.

rlearner

An R package implementing the [R-learner](#) and other meta-learners for the estimation of heterogenous treatment effects. My code simultaneously extends all of the methods to be compatible with any machine learning algorithm available in the caret package.

LowRankModels.jl

A Julia package for fitting [generalized low-rank models](#). My contributions include a number of optimizations of the core algorithm and some extensions allowing for different regularization schemes and losses.

PATENTS

Alejandro Schuler, David Walsh, Charles Fisher. U.S. Provisional Patent Application No. 63/144,915, System and Methods for Sample Size Calculations in Randomized Trials that Are Augmented With Prognostic Models (February 2021)

Alejandro Schuler, David Miller. U.S. Provisional Patent Application No. 63/214,643, Systems and Methods for Randomized Trials via Prognostic Score Stratification (June 2021)

SERVICE AND ADVOCACY

Editor *JAMIA Student Editorial Board*

May 2018 to May 2019

Councilor *Graduate Student Council*

May 2017 to May 2018

The Graduate Student Council (GSC) is an elected 15-member independent entity that apportions a quarter-million dollar yearly budget to support the well-being of all graduate students at Stanford and advocate on their behalf to the provost and other executive administrators. As a councilor, I worked for graduate student representation on administrative committees, housing rights, and sensible tax policy.

Invited Member *Dean's Task Force on Diversity and Societal Citizenship*

Jan. 2017 to Jan 2018

I reviewed progress on diversity initiatives and educational opportunities at the Stanford School of Medicine and made recommendations for improvement.

Student Representative *Stanford Biomedical Informatics Training Program*

Oct. 2016 to Oct. 2017

I represented student interests by serving on executive committees for program development, curriculum, and admissions for the PhD training program. I reviewed applications and interviewed candidates for the program and contributed to admissions decisions. My participation led to the wider adoption of admissions rubrics and kick-started a review of the curriculum and qualification exam process.

Member *School of Medicine Biosciences Diversity Advocacy Committee*

2016 to 2017

Evaluated incoming PhD candidates for an internal fellowship. Advocated for punitive measures against departments abusing this source of funding to avoid admitting diverse candidates outright.

Member *School of Medicine Committee on Graduate Admissions and Policy* 2016 to 2017
Advocated for structured admission processes and the elimination of the GRE requirement.

President, Advocacy Chair *Biosciences Association for the Interest of Minority Students* 2015 to 2017
As president, I coordinated and empowered the board to execute programming. I also served as a voting member on Stanford School of Medicine faculty committees for admissions and diversity, where I instigated and led the implementation of admissions processes to limit unconscious bias.

Men's Outreach Coordinator *Stanford Women's Community Center* Oct. 2014 to Feb. 2017
Helping men become fulfilled, free, and empathetic by promoting meaningful dialogue and action around gender in the Stanford community. I organized and moderated events, discussions, and media showings. I was awarded a competitive grant to design and execute an event series which included renowned speakers like Roxane Gay.

AWARDS,
RECOGNITION,
FUNDING

Best of AcademyHealth Annual Research Meeting *AcademyHealth 2020* Jan. 2020
In recognition of our submission "Predicting Preventable Hospital Readmissions with Causal Machine Learning".

Student Commencement Speaker *Stanford School of Medicine* Jun. 2019
I was elected from hundreds of graduating students in the school of medicine to deliver this address.

SCPD Teaching Award *Stanford Center for Professional Development* Jan. 2018
I received this award in recognition of my work supporting distance learning students in my design and teaching of BIOMEDIN 215: Data-Driven Medicine.

DARE Fellow *Stanford Vice Provost of Graduate Education* Aug. 2017
DARE (Diversifying Academia, Recruiting Excellence) is a competitive and prestigious two-year full fellowship and training program for Stanford graduate students working to create an equitable and just academic culture.

SCORE Academic Innovation Grant *Stanford VPTL* Funded July 2016
I secured competitive funding to pay for my redesign of Stanford's data-driven medicine course

Learning Guidelines *AstraZeneca and Stanford Center for Clinical Research* Funded July 2016
I wrote the entirety of this quarter-million dollar grant awarded to the Shah Lab. I proposed learning treatment guidelines by applying heterogeneous treatment effect models to electronic health records data.

ADVANCE Institute Fellow *Stanford Biosciences Office of Graduate Education* June 2014