

CONTACT DETAILS	<p>University of Chicago Department of Statistics &amp; Data Science Institute 5735 S Ellis Ave Chicago, IL 10027, 60637</p> <p>Telephone: +1 (650) 656-0855 E-mail: ignat@uchicago.edu Website: <a href="https://nignatiadis.github.io/">https://nignatiadis.github.io/</a> Google Scholar: user=KH3jpkoAAAAJ</p>
RESEARCH INTERESTS	<p>I am interested in the development of interpretable statistical methods, accompanied by robust software implementations, for the analysis of datasets generated from modern, high-throughput technologies. From a statistical perspective, this interest encompasses Empirical Bayes analysis, causal inference, multiple testing and statistics in the presence of contextual side-information.</p>
ACADEMIC EMPLOYMENT	<p><b>Department of Statistics and Data Science Institute, University of Chicago</b> Chicago, USA  <ul style="list-style-type: none"> <li>Assistant Professor</li> </ul> Beginning 07/2023</p> <p><b>Department of Statistics, Columbia University</b> New York, USA  <ul style="list-style-type: none"> <li>Postdoctoral Research Scientist</li> </ul> 09/2022 - 06/2023</p>
EDUCATION	<p><b>Stanford University</b> Stanford, California, USA  <ul style="list-style-type: none"> <li><b>Ph.D., Statistics</b> (GPA 4.24) 09/2016 – 06/2022  Thesis advisor: Stefan Wager  Thesis title: Nonparametric perspectives on empirical Bayes.</li> <li><b>M.S., Statistics</b></li> </ul> </p> <p><b>Heidelberg University</b> Heidelberg, Germany  <ul style="list-style-type: none"> <li><b>M.Sc., Scientific Computing</b>, Grade 1.0 2015 - 2016  Thesis advisors: Wolfgang Huber and Enno Mammen</li> <li><b>B.Sc., Mathematics</b>, Grade 1.0 with <i>distinction</i> 2011 - 2015  Thesis advisors: Wolfgang Huber and Rainer Dahlhaus</li> <li><b>B.Sc., Molecular Biotechnology</b>, Grade 1.0 2010 - 2013</li> </ul> </p>
AWARDS AND FELLOWSHIPS	<p><b>Jerome H. Friedman Applied Statistics Dissertation Award</b> 2022  For developing methodology that uses side information for increased power in multiple testing problems and for developing approaches to inference in empirical Bayes problems.</p> <p><b>Ric Weiland Graduate Fellowship in the Humanities &amp; Sciences</b> 2020 - 2021  This fellowship is awarded to exceptional rising fourth year doctoral candidates in the humanities, social sciences, mathematics, and statistics upon departmental or programmatic nomination.</p> <p><b>Departmental Teaching Assistant Award</b>, Statistics Department, Stanford 2018</p> <p><b>iGEM Grand Prize Winner &amp; Best Foundational Advance</b> 2013  The International Genetically Engineered Machine competition with Team Heidelberg at MIT.</p> <p><b>Deutschlandstipendium</b>, Heidelberg University, Germany 2011 - 2013  This scholarship is awarded to talented and high-achieving students at public and state recognised institutions of higher education in Germany and is supported by the German Federal Government.</p> <p><b>Bronze medal at the International Biology Olympiad</b>, Changwon, South Korea 2010</p>
JOURNAL PUBLICATIONS	<ol style="list-style-type: none"> <li>Nikolaos Ignatiadis, Sujayam Saha, Dennis L. Sun, Omkar Muralidharan (2023). <b>Empirical Bayes mean estimation with nonparametric errors via order statistic regression on replicated data.</b> Journal of the American Statistical Association, Theory and Methods, 118(542), 987-999.</li> <li>Nikolaos Ignatiadis, Stefan Wager (2022). <b>Rejoinder: Confidence Intervals for Nonparametric Empirical Bayes Analysis.</b> Journal of the American Statistical Association, Theory and Methods, 117(539), 1192-1199.</li> <li>Nikolaos Ignatiadis, Stefan Wager (2022). <b>Confidence Intervals for Nonparametric Empirical Bayes Analysis.</b> Journal of the American Statistical Association, Theory and Methods, 117(539), 1149-1166.</li> </ol>

	<p>4. Nikolaos Ignatiadis, Wolfgang Huber (2021). <b>Covariate powered cross-weighted multiple testing</b>. Journal of the Royal Statistical Society: Series B (JRSS-B), 83(4), 720-751.</p> <p>5. Loukia Karacosta, Benedict Anchang, Nikolaos Ignatiadis, Samuel Kimmey, Jalen Benson, Joseph Shrager, Robert Tibshirani, Sean Bendall, Sylvia K. Plevritis (2019). <b>Mapping lung cancer epithelial-mesenchymal transition states and trajectories with single-cell resolution</b>. Nature communications, 10, 5887.</p> <p>6. Nikolaos Ignatiadis, Bernd Klaus, Judith Zaugg, Wolfgang Huber (2016). <b>Data-driven hypothesis weighting increases detection power in genome-scale multiple testing</b>. Nature methods, 13(7), 577-580.</p> <p>7. Ralf Beer, Konrad Herbst, Nikolaos Ignatiadis, Ilia Kats, Lorenz Adlung, Hannah Meyer, Dominik Niopek, Tania Christiansen, Fanny Georgi, Nils Kurzawa, Johanna Meichsner, Sophie Rabe, Anja Riedel, Joshua Sachs, Julia Schessner, Florian Schmidt, Philipp Walch, Katharina Niopek, Tim Heinemann, Roland Eils, Barbara Di Ventura (2014). <b>Creating functional engineered variants of the single-module non-ribosomal peptide synthetase IndC by T domain exchange</b>. Molecular BioSystems, 10(7), 1709-1718.</p>
CONFERENCE PROCEEDINGS	<p>8. Stephen Pfohl, Yizhe Xu, Agata Foryciarz, Nikolaos Ignatiadis, Julian Genkins, Nigam H. Shah (2022). <b>Net benefit, calibration, threshold selection, and training objectives for algorithmic fairness in healthcare</b>. ACM Conference on Fairness, Accountability, and Transparency (FAccT'22).</p> <p>9. Nikolaos Ignatiadis, Stefan Wager (2019). <b>Covariate-Powered Empirical Bayes Estimation</b>. Advances in Neural Information Processing Systems 32 (NeurIPS 2019).</p>
BOOK CHAPTERS	<p>10. Yizhe Xu, Nikolaos Ignatiadis, Erik Sverdrup, Scott Fleming, Stefan Wager, Nigam H. Shah (2023). <b>Treatment Heterogeneity with Survival Outcomes</b>. Book chapter in: Handbook of Matching and Weighting Adjustments for Causal Inference. Edited by José R. Zubizarreta, Elizabeth A. Stuart, Dylan S. Small, and Paul R. Rosenbaum. Chapman and Hall / CRC Press.</p>
PREPRINTS	<p>11. Nikolaos Ignatiadis, Bodhisattva Sen (2023). <b>Empirical partially Bayes multiple testing and compound <math>\chi^2</math> decisions</b>. Working paper.</p> <p>12. Nikolaos Ignatiadis, Ruodu Wang, Aaditya Ramdas (2022). <b>E-values as unnormalized weights in multiple testing</b>. Working paper.</p> <p>13. Dean Eckles, Nikolaos Ignatiadis, Stefan Wager, Han Wu (2022). <b>Noise-Induced Randomization in Regression Discontinuity Designs</b>. Working paper.</p> <p>14. Nikolaos Ignatiadis, Panagiotis Lolas (2021). <b><math>\sigma</math>-Ridge: group-regularized ridge regression via empirical Bayes noise level cross-validation</b>. Working paper.</p>
INVITED DISCUSSIONS	<p><b>International Seminar on Selective Inference (ISSI)</b> December 2020</p> <p>Discussant of the talk ‘Clipper: p-value-free FDR control on high-throughput data from two conditions’ by Prof. Jingyi Jessica Li.</p>
PEER REVIEW	<p><b>Statistics journals</b></p> <p>Annals of Statistics (AoS), Bernoulli, Biometrical Journal, Biometrics, Biometrika, Electronic Journal of Statistics (EJS), Journal of the American Statistical Association: Theory &amp; Methods (JASA T&amp;M), Journal of Business &amp; Economic Statistics (JBES), Journal of Causal Inference (JCI), Journal of Computational and Graphical Statistics (JCGS), Journal of the Royal Statistical Society–Series B (JRSS-B), Journal of Statistical Software (JSS), Statistical Papers, Statistical Science</p> <p><b>Other journals</b></p> <p>Bioinformatics, Bioinformatics Advances, BMC Medical Research Methodology, Journal of Cell Science, Management Science, Nature Protocols, Operations Research, PeerJ</p> <p><b>Conferences</b></p> <p>AISTATS (2021), NeurIPS (2021, 2022), ICLR (2022)</p>
SOFTWARE	<p><b>R packages</b> in Bioconductor:</p> <ul style="list-style-type: none"> <li>• <b>IHW</b>: Independent Hypothesis Weighting for multiple testing with side-information.</li> </ul>

- [IHWpaper](#): Companion to the IHW package facilitating reproducibility.

**Julia packages** in the official registry:

- [Aurora.jl](#): Empirical Bayes mean estimation with nonparametric errors on replicated data.
- [Empirikos.jl](#): Nonparametric empirical Bayes confidence intervals.
- [RegressionDiscontinuity.jl](#): Basic functionality for analyzing sharp regression discontinuity designs.
- [SigmaRidgeRegression.jl](#):  $\sigma$ -Ridge for regression with features that can be partitioned into groups.
- [SmoothingSplines.jl](#): Nonparametric regression using smoothing splines.
- Contributions to [Distributions.jl](#), [GLM.jl](#), [MultipleTesting.jl](#) and others.

INDUSTRY EXPERIENCE	<b>Google AdsMetrics</b> , Mountain View, USA Data science intern with Omkar Muralidharan, Sujayam Saha and Dennis L. Sun.	Summer 2019
RESEARCH APPOINTMENTS	<b>Biomedical Informatics</b> , Stanford, California, USA Research assistant in the group of Prof. Nigam Shah funded by the NHLBI R01 grant ‘Applying statistical learning tools to personalize cardiovascular treatment’. <b>Statistics Department</b> , Stanford, California, USA Research assistant with Prof. Stefan Wager working on empirical Bayes and causal inference problems. <b>European Molecular Biology Laboratory</b> , Heidelberg, Germany Research assistant in the group of Dr. Wolfgang Huber.	2021 - 2022 2017 - 2021 2014 - 2016
TEACHING	<b>Instructor</b> at Columbia University GR8201: Topics in Theoretical Statistics, Empirical Bayes (jointly with Bodhisattva Sen) Spring 2023 <b>Instructor</b> at Stanford University STATS 302: Applied Statistics Ph.D. Qualifying Exam Workshop. <b>Teaching Assistant (TA)</b> at Stanford University STATS 315B: Modern Applied Statistics: Data Mining. STATS 361: Causal Inference. STATS 305B: Applied Statistics II. STATS 315A: Modern Applied Statistics: Learning. STATS 300A: Theory of Statistics I. STATS 366 (BIOS 221): Modern Statistics for Modern Biology. STATS 218: Introduction to Stochastic Processes II. STATS 290: Computing for Data Science. STATS 305A: Introduction to Statistical Modeling. STATS 191: Introduction to Applied Statistics. STATS 141 (BIOS 141): Biostatistics. <b>Trainer</b> at EMBL (European Molecular Biology Laboratory) Introductory Course: Statistical Bioinformatics using R and Bioconductor	Summer 2020 Spring 2021 Spring 2020 Winter 2020 Winter 2019 Fall 2018 Summer 2017 & 2018, Fall 2019 Spring 2018 Winter 2018 Fall 2017 Winter 2017 Fall 2016 October 2015
TALKS AND PRESENTATIONS	<b>Empirical partially Bayes multiple testing and compound <math>\chi^2</math> decisions</b> 2023 Berkeley–Columbia Meeting in Engineering and Statistics, Columbia University New York, NY, USA, April 2023 <b>Confidence Intervals for Nonparametric Empirical Bayes Analysis</b> Seminar at Department of Statistics and Data Science, Yale University New Haven, CT, USA, November 2022 <b>Noise-Induced Randomization in Regression Discontinuity Designs</b> Econometrics Colloquium at the Economics Department, Columbia University New York, NY, USA, November 2022 <b>Confidence Intervals for Nonparametric Empirical Bayes Analysis</b> Statistics Department Seminar at Athens University of Economics and Business (AUEB) Virtual, October 2022 <b>Covariate-Powered Empirical Bayes Estimation</b> Seminar (student seminar series) at the Department of Statistics, Columbia University New York, NY, USA, September 2022	

**Noise-Induced Randomization in Regression Discontinuity Designs**

Second Congress of Greek Mathematicians (SCGM)

Virtual, July 2022

**Confidence Intervals for Nonparametric Empirical Bayes Analysis**

JASA Theory and Methods Invited Session at the Joint Statistical Meetings (JSM)

Washington, DC, USA, June 2022

**Covariate-powered empirical Bayes estimation**

New ideas in empirical Bayes at the 5th International Conference on Econometrics and Statistics (EcoSta 2022)

Virtual, June 2022

**Noise-Induced Randomization in Regression Discontinuity Designs**

Methodological innovations for challenges in health policy and clinical care at the 2022 American Causal Inference Conference

Berkeley, CA, USA, May 2022

**Empirical Bayes Mean Estimation With Nonparametric Errors Via Order Statistic Regression on Replicated Data**

Statistics Seminar at the Department of Statistics, UC Davis

Davis, CA, USA, April 2022

**Nonparametric Empirical Bayes Inference**

Statistics and Data Science Seminar at the Department of Statistics and Data Science, Carnegie Mellon University

Virtual, February 2022

**Nonparametric Empirical Bayes Inference**

Statistics Seminar at the Department of Statistics, University of British Columbia

Virtual, February 2022

**Nonparametric Empirical Bayes Inference**

Statistics Seminar at the Department of Statistics and Data Science, Wharton School of the University of Pennsylvania

Virtual, February 2022

**Nonparametric Empirical Bayes Inference**

Seminar at the Department of Decision Sciences, Bocconi University

Milano, Italy, February 2022

**Nonparametric Empirical Bayes Inference**

Statistics Seminar at the Department of Statistics, UC Davis

Virtual, January 2022

**Confidence intervals for nonparametric empirical Bayes analysis and an application to regression discontinuity designs**

Statistics Seminar at the Department of Statistics, UCLA

Virtual, January 2022

**Nonparametric Empirical Bayes Inference**

Seminar at the Data Science Institute, University of Chicago

Chicago, Illinois, USA, January 2022

**Confidence Intervals for Nonparametric Empirical Bayes Analysis and an Application to Regression Discontinuity Designs**

Seminar at the Department of Statistics and Actuarial Science, University of Waterloo

Virtual, January 2022

**Nonparametric Empirical Bayes Inference**

Statistics Seminar at the Department of Statistics, Columbia University

Virtual, January 2022

**Confidence Intervals for Nonparametric Empirical Bayes Analysis and an Application to the Regression Discontinuity Design**

ACMS Colloquium at Department of Applied and Computational Mathematics and Statistics, University of Notre Dame

Notre Dame, Indiana, USA, December 2021

**Confidence Intervals for Nonparametric Empirical Bayes Analysis**

Advances in Empirical Bayes Methodology at the International Conference on Computational and Methodological Statistics (CMStatistics)

Virtual, December 2021

**Noise-Induced Randomization in Regression Discontinuity Designs**  
 Fourth Annual Berkeley-Stanford Econometrics Jamboree at UC Berkeley  
 Berkeley, CA, USA, November 2021

**Noise-Induced Randomization in Regression Discontinuity Designs**  
 Causal Science Conference at Stanford University  
 Stanford, USA, November 2021

**Noise-Induced Randomization in Regression Discontinuity Designs**  
 Causal Inference When Resources Are Limited at the Joint Statistical Meetings (JSM)  
 Virtual, August 2021

**Confidence Intervals for Nonparametric Empirical Bayes Analysis**  
 International Seminar on Selective Inference (ISSI)  
 Virtual, April 2021

**$\sigma$ -Ridge: group regularized ridge regression via empirical Bayes noise level cross-validation**  
 Statistics Seminar at Vrije Universiteit (VU) Amsterdam campus  
 Virtual, April 2021

**Discussion of 'Clipper: p-value-free FDR control on high-throughput data from two conditions'**  
 Discussant at the International Seminar on Selective Inference (ISSI)  
 Virtual, December 2020

**Bias-Aware Confidence Intervals for Empirical Bayes Analysis**  
 Causality in Statistical Data Science at the Joint Statistical Meetings (JSM)  
 Virtual, August 2020

**Covariate-Powered Empirical Bayes Estimation**  
 Blue Seminar at the European Molecular Biology Laboratory (EMBL)  
 Heidelberg, Germany, January 2020

**Covariate-Powered Empirical Bayes Estimation**  
 11th International Conference on Multiple Comparison Procedures at the National Taiwan University (NTU)  
 Taipei, Taiwan, December 2019

**Bias-Aware Confidence Intervals for Empirical Bayes Analysis**  
 Atlantic Causal Inference Conference at McGill University  
 Montreal, Canada, May 2019

**Covariate powered cross-weighted multiple testing**  
 Statistics Industrial Affiliates Conference at Stanford University  
 Stanford, CA, USA, February 2019

**Covariate-powered cross-weighted multiple testing with FDR Control**  
 Workshop in Post-selection Inference and Multiple Testing at the Institut de Mathématiques de Toulouse  
 Toulouse, France, February 2018

**MultipleTesting.jl: Simultaneous Statistical Inference in Julia**  
 Lightning talk at JuliaCon  
 Berkeley, CA, USA, June 2017

**Data-driven hypothesis weighting increases detection power in genome-scale multiple testing**  
 Genome Biology Seminar at the European Molecular Biology Laboratory (EMBL)  
 Heidelberg, Germany, July 2016