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EDUCATION

2017	PhD	University of Pennsylvania	Neuroscience
2008	MBBS* AICSM**	Imperial College London	Medicine
2006	BSc	Imperial College London	Biomedical Sciences with Psychology and Psychiatry

POSITIONS HELD

2020 -	Assistant Professor	University of California, San Francisco Laboratory of Computational Medicine Div. Bioinformatics, Dept. Epidemiology and Biostatistics School of Medicine
2019 - 2020	Research Scientist	Stanford University Laboratory of Artificial Intelligence in Medicine and Biomedical Physics Div. Medical Physics, Dept. Radiation Oncology School of Medicine
2019	Visiting Research Scientist	University of Pennsylvania Perelman School of Medicine
2017 - 2019	Asst. Prof. Researcher	University of California, San Francisco Div. Medical Physics, Dept. Radiation Oncology School of Medicine
2008 - 2011	Assistant Specialist	University of California, San Francisco Memory and Aging Center, Dept. Neurology School of Medicine

TEACHING

2022-	Instructor	Designing Clinical Research: Introduction to R Programming School of Medicine University of California, San Francisco
2020 -	Course director	Biostat 214 Programming for Health Data Science in R II Dept. Epidemiology and Biostatistics University of California, San Francisco

* Bachelor of Medicine, Bachelor of Surgery; UK medical degree equivalent to US MD

** Associateship of the Imperial College School of Medicine

2020 -	Course director	Biostat 213 Introduction to Programming for Health Data Science in R Dept. Epidemiology and Biostatistics University of California, San Francisco
2019	Guest Lecturer	Biostat 216 Machine Learning in R Dept. Epidemiology and Biostatistics University of California, San Francisco
2013 - 2014	Guest Lecturer	BIBB 249 Cognitive Neuroscience School of Arts & Sciences University of Pennsylvania

PROGRAMMING LANGUAGES

R, Julia, Python, MATLAB, Bash, HTML, CSS

SOFTWARE AUTHORED

rtemis	Advanced Machine Learning and visualization for all: A framework for ML research, education, and applied data science in R . 80+ supported algorithms for supervised and unsupervised learning - clustering, decomposition, cross-decomposition, classification, regression, survival analysis. Includes novel ML algorithms for accurate and interpretable models. GitHub: egenn/rtemis Documentation: rtemis.lambdamd.org
rtemislive	Comprehensive online data science and visualization web application. Modular and customizable, includes support for data preprocessing, interactive visualization, decomposition, network visualization, hypothesis testing, predictive modeling, medical image viewer. (R, Shiny, HTML, JavaScript, CSS , powered by rtemis) Deployed on the UCSF network. Contact for details.
Rtemis.jl	A Julia port of rtemis to take advantage of the language's type system and speed.
music	Learn and experiment with music theory in R . Build, plot, and play back scales, chords, and chord progressions. GitHub: egenn/music CRAN: cran.r-project.org/package=music . Vignette: github.com/egenn/music
PNC Explorer	Dynamic web app for exploring the full data release of the Philadelphia Neurodevelopmental Cohort. Interactive univariate and bivariate plots, heatmaps, and dynamic tables. Written in R + shiny , powered by rtemis .
MMP	Multimodal MRI preprocessing pipelines based on ANTs and FSL for structural, functional, and diffusion-weighted imaging.

Written in **Bash** for Sun/Oracle Grid Engine.

INVITED TALKS

- 2021 Statistical Methods in Imaging (SMI) conference 2021
Efficient and Accessible Machine Learning with rtemis
- 2020 International Conference on Computational and Methodological Statistics (**CMStatistics 2020**)
The Linear Additive Tree
- 2020 **UCLA** Dept. Computational Medicine
Expert-Augmented Machine Learning
- 2020 **UCSF** Dept. Epidemiology and Biostatistics Seminar Series,
Expert-Augmented Machine Learning
- 2019 **USF** Seminar Series in Data Science, University of San Francisco
We need new Machine Learning for Precision Medicine
- 2018 **Stanford** Dept. Radiation Oncology, Stanford
rtemis: Advanced Machine Learning for Precision Medicine made easy
- 2018 **University of Pennsylvania** Brain Behavior Lab
Accurate and Interpretable Machine Learning for Precision Medicine
- 2017 **USF** Data Institute Inaugural Conference
Machine Learning for Precision Medicine: Promises and Challenges
- 2015 **RWTH Aachen** University
Differential age-related effects on human gray matter density and volume in the periadolescent period.

PROFESSIONAL SERVICE

- 2021 **Session organizer** International Conference on Computational and Methodological Statistics (CMStatistics 2021): "Interpretability and Trustworthiness in Machine Learning for Critical Applications"
- 2019 **Program committee** DebugML-19: ICLR Workshop on Debugging Machine Learning Models
- 2018 **Grant reviewer** Natural Sciences and Engineering Research Council of Canada (NSERC)

PEER-REVIEWED PUBLICATIONS ([PubMed](#), [Google scholar](#))

Lewis KA, Osier N, Carrasco R, Chiou J, Carter P, Garcia A, Flowers E, **Gennatas ED**, Nguyen C, Rana A, Brown SA, Tiziani S. Serine, *N*-acetylaspartate differentiate adolescents with juvenile idiopathic arthritis compared with healthy controls: a metabolomics cross-sectional study. *Pediatric Rheumatology* 2022

Valdes G, Friedman J, Jiang F, **Gennatas E**. Representational Gradient Boosting: Backpropagation in the Space of Functions. *IEEE Trans Pattern Anal Mach Intell.* 2021

Valdes G, Interian Y, **Gennatas E**, Van der Laan M. *The Conditional Super Learner*. IEEE Transactions on Pattern Analysis and Machine Intelligence 2021

Spinelli MA, Glidden DV, **Gennatas ED**, Rutherford GW, Gandhi M. Effectiveness of Adding a Mask Recommendation to Other Public Health Measures. Ann Intern Med. 2021

Spinelli MA, Glidden DV, **Gennatas ED**, Bielecki M, Beyrer C, Rutherford G, Chambers H, Goosby E, Gandhi M. *Importance of non-pharmaceutical interventions in lowering the viral inoculum to reduce SARS-CoV-2 susceptibility and potentially disease severity*. The Lancet Infectious Diseases 2021

Gur RC, Butler ER, Moore TM, Rosen AF, Ruparel K, Satterthwaite TD, Roalf DR, **Gennatas ED**, Bilker WB, Shinohara RT, Port A, Elliott MA, Verma R, Davatzikos C, Wolf DH, Deter JA, Gur RE. *Structural and Functional Brain Parameters Related to Cognitive Performance Across Development: Replication and Extension of the Parieto-Frontal Integration Theory in a Single Sample*. Cerebral cortex 2020

Gennatas ED, Friedman JH, Ungar LH, Pirracchio R, Eaton E, Reichman L, Interian Y, Simone CB, Auerbach A, Delgado E, Van der Laan MJ, Solberg TD, Valdes G. *Expert-Augmented Machine Learning*. Proc Natl Acad Sci USA 2020

Luna JM*, **Gennatas ED***, Eaton E, Diffenderfer E, Ungar LH, Jensen ST, Charles SB II, Friedman JH, Solberg TD, Valdes G. *Building more accurate decision trees with the Additive Tree*. Proc Natl Acad Sci USA 2019
***Equal contribution**

Butler PM, Chiong W, Perry DC, Miller ZA, **Gennatas ED**, Brown JA, Pasquini L, Karydas A, Dokuru D, Coppola G, Sturm VE, Boxer AL, Gorno-Tempini ML, Rosen HJ, Kramer JH, Miller BL, Seeley WW, *Dopamine receptor D4 (DRD4) polymorphisms with reduced functional potency intensify atrophy in syndrome-specific sites of frontotemporal dementia*. NeuroImage: Clinical 2019

Morin O, Chen W, **Gennatas E**, Magill S, Wu A, Valdes G, Perry A, Sneed P, McDermott M, Solberg T, Oberheim Bush NA, Braunstein S, Villanueva-Meyer J, Raleigh D. *Preoperative quantitative imaging features are prognostic for meningioma outcomes*. Neuro-Oncology, November 2018

Gennatas ED, Wu A, Braunstein SE, Morin O, Chen WC, Magill ST, Gopinath C, Villanueva-Meyer JE, Perry A, McDermott MW, Solberg TD. *Preoperative and postoperative prediction of long-term meningioma outcomes*. PloS ONE. 2018 (Featured in Machine Learning in Health and Biomedicine special issue)

Interian Y, Rideout V, Kearney VP, **Gennatas E**, Morin O, Cheung J, Solberg T, Valdes G. *Deep nets vs expert designed features in medical physics: An IMRT QA case study*. Med Phys. 2018 Mar 30.

Rosen AFG, Roalf DR, Ruparel K, Blake J, Seelaus K, Villa LP, Ciric R, Cook PA, Davatzikos C, Elliott MA, Garcia de La Garza A, **Gennatas ED**, Quarmley M, Schmitt JE, Shinohara RT, Tisdall MD, Craddock RC, Gur RE, Gur RC, Satterthwaite TD. *Quantitative assessment of structural image quality* Neuroimage. 2018

Vandekar SN, Shou H, Satterthwaite TD, Shinohara RT, Merikangas AK, Roalf DR, Ruparel K, Rosen A, **Gennatas ED**, Elliott MA, Davatzikos C, Gur RC, Gur RE, Deter JA. *Sex differences in estimated brain metabolism in relation to body growth through adolescence*. J Cereb Blood Flow Metab. 2017

- Gennatas ED**, Avants BB, Wolf DH, Satterthwaite TD, Ruparel K, Ciric R, Hakonarson H, Gur RE, Gur RC. *Age-related effects and sex differences on gray matter density, volume, mass, and cortical thickness from childhood to young adulthood*. J Neurosci. 2017 (Featured on the cover and editorial)
- Aguirre GK, Datta R, Benson NC, Prasad S, Jacobson SG, Cideciyan AV, Bridge H, Watkins KE, Butt OH, Dain AS, Brandes L, **Gennatas ED**. *Patterns of Individual Variation in Visual Pathway Structure and Function in the Sighted and Blind*. Ptito M, ed. PLoS ONE. 2016
- Kaczurkin AN, Moore TM, Ruparel K, Ciric R, Calkins ME, Shinohara RT, Elliott MA, Hopson R, Roalf DR, Vandekar SN, **Gennatas ED**, Wolf DH, Scott JC, Pine DS, Leibenluft E, Detre JA, Foa EB, Gur RE, Gur RC, Satterthwaite TD. *Elevated Amygdala Perfusion Mediates Developmental Sex Differences in Trait Anxiety*. Biol Psychiatry. 2016
- Shanmugan S, Wolf DH, Calkins ME, Moore TM, Ruparel K, Hopson RD, Vandekar SN, Roalf DR, Elliott MA, Jackson C, **Gennatas ED**, Leibenluft E, Pine DS, Shinohara RT, Hakonarson H, Gur RC, Gur RE, Satterthwaite TD. *Common and Dissociable Mechanisms of Executive System Dysfunction Across Psychiatric Disorders in Youth*. Am J Psychiatry. 2016
- Guo CC, Sturm VE, Zhou J, **Gennatas ED**, Trujillo AJ, Hua AY, Crawford R, Stables L, Kramer JH, Rankin K, Levenson RW, Rosen HJ, Miller BL, Seeley WW. *Dominant hemisphere lateralization of cortical parasympathetic control as revealed by frontotemporal dementia*. Proc Natl Acad Sci USA. 2016
- Roalf DR, Quarmley M, Elliott MA, Satterthwaite TD, Vandekar SN, Ruparel K, **Gennatas ED**, Calkins ME, Moore TM, Hopson R, Prabhakaran K, Jackson CT, Verma R, Hakonarson H, Gur RC, Gur RE. *The impact of quality assurance assessment on diffusion tensor imaging outcomes in a large-scale population-based cohort*. Neuroimage. 2016
- Satterthwaite TD, Vandekar SN, Wolf DH, Bassett DS, Ruparel K, Shehzad Z, Craddock RC, Shinohara RT, Moore TM, **Gennatas ED**, Jackson C, Roalf DR, Milham MP, Calkins ME, Hakonarson H, Gur RC, Gur RE. *Connectome-wide network analysis of youth with Psychosis-Spectrum symptoms*. Mol Psychiatry. 2015
- Satterthwaite TD, Wolf DH, Roalf DR, Ruparel K, Erus G, Vandekar S, **Gennatas ED**, Elliott MA, Smith A, Hakonarson H, Verma R, Davatzikos C, Gur RE, Gur RC. *Linked Sex Differences in Cognition and Functional Connectivity in Youth*. Cerebral Cortex. 2015
- Satterthwaite TD, Shinohara RT, Wolf DH, Hopson RD, Elliott MA, Vandekar SN, Ruparel K, Calkins ME, Roalf DR, **Gennatas ED**, Jackson C, Erus G, Prabhakaran K, Davatzikos C, Detre JA, Hakonarson H, Gur RC, Gur RE. *Impact of puberty on the evolution of cerebral perfusion during adolescence*. Proc Natl Acad Sci USA. 2014
- Satterthwaite TD, Wolf DH, Ruparel K, Erus G, Elliott MA, Eickhoff SB, **Gennatas ED**, Jackson C, Prabhakaran K, Smith A, Hakonarson H, Verma R, Davatzikos C, Gur RE, Gur RC. *Heterogeneous impact of motion on fundamental patterns of developmental changes in functional connectivity during youth*. Neuroimage. 2013
- Satterthwaite TD, Wolf DH, Erus G, Ruparel K, Elliott MA, **Gennatas ED**, Hopson R, Jackson C, Prabhakaran K, Bilker WB, Calkins ME, Loughhead J, Smith A, Roalf DR, Hakonarson H, Verma R, Davatzikos C, Gur RC, Gur RE. *Functional maturation of the executive system during adolescence*. J Neurosci. 2013
- Gardner RC, Boxer AL, Trujillo A, Mirsky JB, Guo CC, **Gennatas ED**, Heuer HW, Fine E, Zhou J, Kramer JH, Miller BL, Seeley WW. *Intrinsic connectivity network disruption in progressive supranuclear palsy*. Ann Neurol. 2013

Gennatas ED, Cholfin JA, Zhou J, Crawford RK, Sasaki DA, Karydas A, Boxer AL, Bonasera SJ, Rankin KP, Gorno-Tempini ML, Rosen HJ, Kramer JH, Weiner M, Miller BL, Seeley WW. *COMT Val158Met genotype influences neurodegeneration within dopamine-innervated brain structures*. *Neurology*. 2012

Zhou J, **Gennatas ED**, Kramer JH, Miller BL, Seeley WW. *Predicting regional neurodegeneration from the healthy brain functional connectome*. *Neuron*. 2012;73(6):1216-1227.

Rohrer JD, Geser F, Zhou J, **Gennatas ED**, Sidhu M, Trojanowski JQ, Dearmond SJ, Miller BL, Seeley WW. *TDP-43 subtypes are associated with distinct atrophy patterns in frontotemporal dementia*. *Neurology*. 2010

Zielinski BA, **Gennatas ED**, Zhou J, Seeley WW. *Network-level structural covariance in the developing brain*. *Proc Natl Acad Sci USA*. 2010

Zhou J, Greicius MD, **Gennatas ED**, Growdon ME, Jang JY, Rabinovici GD, Kramer JH, Weiner M, Miller BL, Seeley WW. *Divergent network connectivity changes in behavioural variant frontotemporal dementia and Alzheimer's disease*. *Brain*. 2010;133(Pt 5):1352-1367.

PREPRINTS (not otherwise published)

Valdes G, Interian Y, **Gennatas ED**, van der Laan MJ. *Condition Super Learner*. arXiv:1912.06675, 2019

Gur RC, Moore TM, Rosen AFG, Ruparel K, Satterthwaite TD, Roalf DR, **Gennatas ED**, Bilker WB, Shinohara RT, Port A, Elliott MA, Verma R, Davatzikos C, Wolf DH, Detre JA, Gur RE. *Multimodal parameters of brain structure and function related to sex differences in cognitive performance*. bioRxiv 2019; 659193.

Luna JM, Eaton E, Ungar LH, Diffenderfer E, Jensen ST, **Gennatas ED**, Wirth M, Charles SB, Solberg TD, Valdes G. *Tree-Structured Boosting: Connections Between Gradient Boosted Stumps and Full Decision Trees* arXiv:1711.06793 2017

MANUSCRIPTS IN PREPARATION

Gennatas ED, Friedman JH, Eaton E, CB Simone II, Ungar LH, Xing L, Valdes G. *The Linear Additive Tree*. 2022 (under review)

COMPUTER SCIENCE CONFERENCE PAPERS

Gennatas ED, Interian Y, Solberg TD, Van der Laan MJ, Valdes G. *Conditionally Interpretable SuperLearner*. *Neural Information Processing Systems* 2018

Luna JM, Eaton E, Ungar LH, Diffenderfer E, Jensen ST, **Gennatas ED**, Wirth M, Charles SB, Solberg TD, Valdes G. *Tree-Structured Boosting: Connections Between Gradient Boosted Stumps and Full Decision Trees* arXiv:1711.06793. *Neural Information Processing Systems 2017 Symposium on Interpretable Machine Learning*

BOOK CHAPTERS

Gennatas ED, "Artificial Intelligence in Medicine: Past, Present, and Future" In *Artificial Intelligence in Medicine* (pp. 3-18). Academic Press.

ONLINE BOOKS

Gennatas ED, "Programming for Data Science in R", <https://class.lambdamd.org/pdsr/>

Online reference for Biostat 213 and 214

BIOMEDICAL CONFERENCE ABSTRACTS (selection)

Gennatas ED, Wu A, Braunstein SE, Morin O, Chen WC, Magill ST, Gopinath C, Villaneueva-Meyer JE, Perry A, McDermott MW, Solberg TD. *Pre- and postoperative prediction of long-term meningioma outcomes*. American Society for Radiation Oncology 2018

Morin O, Chen WC, Villaneueva-Meyer J, **Gennatas ED**, Wu A, Cha A, Magill A, Perry A, Sneed PK, McDermott MW, Solberg TD, Valdes G, Braunstein SE, Raleigh D. *Point-of-Care Local Failure and Overall Survival Prediction Models for Meningioma*. American Society for Radiation Oncology 2018

Witztum A, **Gennatas E**, Valdes G, Solberg T, Raleigh D, Morin O. *Assessing the Influence of Imaging Parameters and Contouring on Meningioma Local Failure Prediction Models*. The American Association of Physicists in Medicine 2018 Annual Meeting

Gennatas E, Morin O, Braunstein S, Solberg T, Valdes G, Raleigh D. *Preoperative Prediction of Local Failure and Overall Survival for Meningioma* European Society for Radiotherapy & Oncology 2018

Gennatas ED, Avants BB, Wolf DH, Ruparel K, Hakonarson H, Gur RE, Gur RC. *Differential age-related effects on human gray matter density and volume in the periadolescent period*. Annual Meeting of the Organization for Human Brain Mapping, 2015

Gennatas ED, Satterthwaite TD, Wolf DH, Ruparel K, Vandekar S, Hakonarson H, Gur RE, Gur RC. *Developmental trajectories of gray matter density from childhood to young adulthood*. Society for Neuroscience Annual Meeting, 2014 - **Selected for Neuroscience 2014 Hot Topics**

Datta R, Benson N, Daina A, **Gennatas ED**, Prasad S, Butt O, and Aguirre GK. *A Single Mode Of Brain Alteration In Blindness. A Multimodal MR Imaging Study*. Annual Meeting of the American Academy of Neurology, 2014

Datta R, Daina AB, Brandes L, **Gennatas ED**, Prasad S, Butt OH, Aguirre GK. *Blindness produces yoked changes in V1 cortical thickness, cross-modal responses, and resting metabolism*. Visual Science Society Annual Meeting, 2013

Gardner R, Boxer A, Trujillo A, Mirsky J, Guo C, **Gennatas ED**, Heuer H, Fine E, Zhou J, Kramer J, Miller B, and Seeley WW. *Intrinsic Connectivity Network Disruption in Progressive Supranuclear Palsy*. Annual Meeting of the American Academy of Neurology, 2013

Guo C, Sturm VE, Zhou J, Trujillo A, **Gennatas ED**, Miller BL, & Seeley WW. *Autonomic dysregulation at baseline in neurodegenerative diseases*. International conference on frontotemporal dementias, 2012

Zielinski BA, **Gennatas ED**, Zhou J, & Seeley WW. *Structural covariance networks in adolescents and young adults*. Annual Child Neurology Society Meeting, 2011

Zhou J, **Gennatas ED**, Kramer JH, Miller BL, Seeley WW. *Critical network epicenters and connectivity-based-vulnerability in neurodegeneration*. Annual Meeting of the Organization for Human Brain Mapping, 2011 and International conference on frontotemporal dementias, 2010

Gennatas ED, Cholfin JA, Zhou J, Crawford RK, Sasaki D, Karydas A, Miller DL, Seeley WW. *COMT Val158Met genotype influences dopamine-innervated brain structure volume in neurodegenerative disease*. International conference on frontotemporal dementias, 2010

Zhou J, Greicius MD, **Gennatas ED**, Growdon ME, Jang JY, Rabinovici GD, Kramer JH, Weiner M, Miller BL, Seeley WW. *Divergent network connectivity changes in behavioral variant frontotemporal dementia and Alzheimer's disease*. Annual Meeting of the American Academy of Neurology, 2010

Gennatas ED, Zhou J, Kramer JH, Miller BL, Seeley WW. *The salience network divided: processing and responding to emotional relevance*. Annual Meeting of the Organization for Human Brain Mapping, 2010

Zhou J, Rankin KP, **Gennatas ED**, Kramer JH, Miller BL, Seeley WW. *Individual differences in human empathy relate to intrinsic connectivity network patterns*. Annual Meeting of the Organization for Human Brain Mapping, 2010

Zielinski BA, **Gennatas ED**, Zhou J, Seeley WW. *Network-level structural covariance in the developing brain*. Annual Meeting of the Organization for Human Brain Mapping, 2009