KEVIN SLOTE

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Google Scholar ◇ Github ◇ LinkedIn

EDUCATION

Georgia State University *2020 – July 2025*
Ph.D. in Applied Mathematics Atlanta, Georgia
Advisor: Igor Belykh

Georgia State University *2017 – 2019*
M.S. in Abstract Algebra Atlanta, Georgia
Advisor: Florian Enescu

Georgia State University *2013 – 2017*
B.S. in Mathematics and Statistics, Minor in Physics Atlanta, Georgia

PUBLICATIONS, PREPRINTS, PATENTS

Node degree volatility for seizure onset zone identification.
Slote, K., Smith, K., Shamshad, M., Epstein, C. M., Dhamala, M., & Belykh, I. Node degree volatility for seizure onset zone identification. *in final perperation (2025)*

Attractor Topology for Seizure Onset Zone Detection.
Slote, K., Smith, K., Shamshad, M., Dhamala, M., & Belykh, I. *In final preperation (2025)*

Explainable Machine Learning for Seizure Onset Biomarker Comparison
Slote, K., Smith, K., Shamshad, M., Dhamala, M., & Belykh, I. *In final preperation (2025)*

How advocacy groups on Twitter and media coverage can drive U.S. firearm acquisition: a causal study
Kevin Slote, Kevin Daley, Rayan Succar, Roni Barak Ventura, Maurizio Porfiri, and Igor Belykh. *PNAS Nexus (accepted)* *(2025)*

Online Performance Estimation with Unlabeled Data: A Bayesian Application of the Hui-Walter Paradigm
Kevin Slote, Elaine Lee. *In: Arai, K. (eds) Advances in Information and Communication. FICC 2025. Lecture Notes in Networks and Systems, vol 1285. Springer, Cham.* *(2025)*

Systems and methods for attacks, countermeasures, archiving, data leak prevention, and other novel services for active messages
SP Tyler, NS Borenstein, JA Maylor, C Da Silva, K Slote, HL Roitblat
US Patent App. 18/415,791. *(2024)*

Systems and methods for attacks, countermeasures, archiving, data leak prevention, and other novel services for active messages
Simon Tyler, Nathaniel Borenstein, Jackie Maylor, Carlos Da Silva, Kevin Slote, Herb Roitblat, *US Patent 12,001,544* *(2024)*

AWARDS AND MEDIA MENTIONS

Outstanding Research Award Online Performance Estimation with Unlabeled Data: A Bayesian Application of the Hui-Walter Paradigm FICC (2025).

Georgia State Mathematicians Reveal Factors Driving Gun Sales in America, Amanda Head (J2025).

RESEARCH INTERESTS

Non-linear Dynamical Systems, Topological Data Analysis, Data-driven Dynamical Systems, Algebraic Geometry, Ergodic Theory, Dynamical Systems, Machine Learning, Generative AI, Computational Topology, and Applied Category Theory.

RESEARCH EXPERIENCE

Biological and Engineering Networks Lab (Jan 2020 – Present)
Mentor: Igor Belykh, Georgia State University.
Non-linear dynamics and topological analysis of epileptology. Developed causal networks, topological data analytics, and machine learning methods for seizure onset zone detection in iEEG data, contributing to surgical outcome prediction. Collaborated with neurologists to integrate findings into potential clinical workflows. Research details: Belykh Lab.

WeSafe Project (Jan 2020 – Present)
Mentor: Igor Belykh, Georgia State University
Analyzed causal links between Twitter advocacy, media narratives, and firearm acquisition trends using advanced causal network methods with Peter and Clark Momentary Conditional Independence (PCMCI) methods. Findings intend to inform discussions on regulatory policies and public safety initiatives. Research details: We-Safe.

Reductions of Noetherian Filtrations (Jan 2013 – Aug 2016)
Mentor: Florian Enescu, Georgia State University.
My research explored reductions of Noetherian filtrations in commutative algebra and their applications to algebraic geometry and abstract algebra and touched on homological algebra and category theory. Developed theoretical results on Noetherian filtrations.

Principal Research Data Scientist (2017 – present)
Designed and implemented advanced machine learning models for natural language processing, including transformers. Applied causal inference and generative AI techniques to develop innovative solutions for predictive analytics and data security. Co-invented patents related to AI and security.

ACADEMIC SERVICE & LEADERSHIP

Data-Driven Dynamics Seminar (Co-Organizer) Society for Industrial and Applied Mathematics (SIAM) Student Chapter, Georgia State University, *(2024).*

WORK EXPERIENCE

Graduate Research Assistant (2020 – present)
Biological and Engineering Networks Lab
Georgia State University

Principal Research Data Scientist (2021 – 2025)
Generative AI, Transformers, Causal Models, Machine and Deep Learning
Egnyte, LLC, Mountain View, CA

Principal Research Data Scientist (2017 – 2021)
Generative AI, Transformers, Causal Models, Machine and Deep Learning
Mimecast, LLC, London, GB

PEER REVIEWER

IEEE Transactions on Network Science and Engineering *May 2021 – present*
PLoS Complex Systems *June 2025 – present*

TALKS, TUTORIALS, AND POSTERS

Node Degree Volatility for Seizure Onset Zone Identification
Kevin Slote, Georgia State University, U.S.; Kelley Smith, Georgia State University, U.S.; Marrium Shamshad, Georgia State University, U.S.; Mukesh Dhamala, Georgia State University, U.S.; Igor Belykh, Georgia State University, U.S. *SIAM Applied Dynamical Systems* *(2025)*

Aperiodic Spectral Neural Activity in Identifying Seizure Onset Zones
Marrium Shamshad, Georgia State University, U.S.; Kelley Smith, Georgia State University, U.S.; Kevin Slote, Georgia State University, U.S.;Mukesh Dhamala, Georgia State University, U.S.; Igor Belykh, Georgia State University, U.S. *SIAM Applied Dynamical Systems* *(2025)*

Hidden Geometry of Epilepsy: A Topological Biomarker for Seizure Onset Zone and Onset Localization
Kevin Slote, Georgia State University, U.S.; Kelley Smith, Georgia State University, U.S.; Marrium Shamshad, Georgia State University, U.S.; Mukesh Dhamala, Georgia State University, U.S.; Igor Belykh, Georgia State University, U.S. *Brains and Behavior* *(2025)*

The Twitter effect: How anti-regulation organizations drive firearm acquisitions in the United States
Kevin Slote, Georgia State University, U.S.; Kevin Daley, US Naval Research Laboratory, U.S.; Rayan Succar, New York University Tandon School of Engineering, U.S.; Roni Ventura, New York University, U.S.; Maurizio Porfiri, New York University Tandon School of Engineering, U.S.; Igor Belykh, Georgia State University, U.S. *SIAM Applied Dynamical Systems* *(2025)*

How advocacy groups on Twitter and media coverage can drive U.S. firearm acquisition: A causal study.
Contributed talk SIAM-SEAS, University of Tennessee (Mar 2025)

Dynamics of Brain Functional Networks and Epileptic Seizures
Slote Kevin, Georgia State University, U.S.; Kelly Smith, Georgia State University, U.S.; Marrium Shamshad, Georgia State University, U.S.; Mukesh Dhamala and Igor Belykh, Georgia State University, U.S. *Brains and Behavior* *(2021)*

Reductions of Noetherian Filtrations
Kevin Slote, Georgia State University, U.S. *Abstract Algebra Seminar* *(2015)*

Random Walks on Weakly Hyperbolic Groups
Kevin Slote, Georgia State University, U.S. *Big Ideas in Dynamics* *(2023)*

The Twitter effect: How anti-regulation organizations drive firearm acquisitions in the United States
Kevin Slote, Georgia State University, U.S.; Kevin Daley, US Naval Research Laboratory, U.S.; Rayan Succar, New York University Tandon School of Engineering, U.S.; Roni Ventura, New York University, U.S.; Maurizio Porfiri, New York University Tandon School of Engineering, U.S.; Igor Belykh, Georgia State University, U.S. *SIAM Mathematical Data Science* *(2024)*

The Twitter effect: How anti-regulation organizations drive firearm acquisitions in the United States
Kevin Slote, Georgia State University, U.S.; Kevin Daley, US Naval Research Laboratory, U.S.; Rayan Succar, New York University Tandon School of Engineering, U.S.; Roni Ventura, New York University, U.S.; Maurizio Porfiri, New York University Tandon School of Engineering, U.S.; Igor Belykh, Georgia State University, U.S. *Georgia Scientific Computing Conference* *(2025)*

Data-Driven Modelling of How Disinformation and Conspiracy Theories Propagate in Social Networks
Kevin Daley and Kevin Slote, Georgia State University, U.S.; Maurizio Porfiri, New York University Tandon School of Engineering, U.S.; Igor Belykh, Georgia State University, U.S. *SIAM Conference on Dynamical Systems* *(2023)*

A Functional Network Criterion for Identifying Seizure Onset Zones from Ieeg Recordings abstract

Smith Kelley, Georgia State University, U.S.; Kevin Slote, Georgia State University, U.S.; Marrium Shamshad, Georgia State University, U.S.; Mukesh Dhamala and Igor Belykh, Georgia State University, U.S. *SIAM Mathematical Data Science* *(2024)*

Dynamics of Brain Functional Networks and Epileptic Seizures
Slote Kevin, Georgia State University, U.S.; Kevin Daley, Georgia State University, U.S.; Kelly Smith, Georgia State University, U.S.; Mukesh Dhamala and Igor Belykh, Georgia State University, U.S. *Brains and Behavior* *(2021)*

Stopping the Spread of Disinformation in Social Networks with Real-Time Control: a Data-Driven Case Study of Online COVID-19 Anti-Vaccine Conspiracy Theorie
Kevin Daley and Kevin Slote, Georgia State University, U.S.; Maurizio Porfiri, New York University Tandon School of Engineering, U.S.; Igor Belykh, Georgia State University, U.S. *SIAM Applied Dynamical Systems* *(2021)*

PROFESSIONAL MEMBERSHIPS

Mathematical Association of America (MAA) *2022 – Present*
Society for Industrial and Applied Mathematics (SIAM) *2020 – Present*
Special Interest Group on Knowledge Discovery and Data Mining (SigKDD) *2019*

TECHNICAL SKILLS

Programming Languages	Python, Java, C++, Javascript, Bash, R, Haskell
Tools	PyTorch, Tensorflow, Keras, CUDA, MATLAB, Stan
Software	LaTeX, Git, Mathematica, Lean