Michael Vaiana

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Education

University at Buffalo
PhD in Computational Data-Enabled Science and Engineering, 3.9/4.0 — *2014–present*

University at Buffalo
Masters in Mathematics, 3.9/4.0 — *2012–2014*

SUNY Geneseo
B.A. Mathematics, 3.9/4.0 — *2010–2012*

Experience

Sandia National Laboratory — **Livermore, CA**
Intern — *2017 Summer*

Princeton University — **Princeton, NJ**
Neurotechnologies for Analysis of Neural Dynamics Fellow — *2016 Summer*

Languages

MATLAB
Python
SQL

Publications

2018: Topological Methods for Automatic Segmentation in Calcium Images *in preparation*
2017: Multilayer Brain Networks *under review*
2017: Interlayer Coupling Limits for Community Detection in Multilayer Networks *in preperation*

Service

2014–2015: *Mathematics Graduate Student Association (GSA) President*
2014–2015: *Founder and Organizer,* Graduate Student Lecture Series, University at Buffalo, Department of Mathematics
2013-2015: *Cofounder and Organizer,* Qualifying Exam Study Group
2012–2014: *Mathematics GSA Vice President*
2010–present: creator of youtube.com/rootmath - free university level mathematics tutorials

Memberships

American Mathematical Society
Mathematical Association of America
Society for Industrial and Applied Mathematics
Society for Neuroscience

Awards and Honors

2017: Computational Data Science and Engineering Graduate Fellowship

2016: 2nd Place Poster: UB Neuroscience Research Day

2016: Princeton University Neurotechnologies for Analysis of Neural Dynamics Fellow

2015: Computational Data Science and Engineering Graduate Fellowship

2012: Geneseo College Excellence in Mathematics Award

2012: Phi Beta Kappa

2012: Pi Mu Epsilon

Talks

2017: *Multilayer Networks with Application in Neuroscience,* University at Buffalo Networks Research Seminar

2016: *Topological Data Analysis with Applications to Neuroscience,* University at Buffalo Graduate Lecture Series

2015: *Modular Reductions for Symmetric Group Representations,* Temple University Graduate Conference in Algebra and Topology

2015: *Representation of the Symmetric Group and Related Objects,* University at Buffalo Graduate Lecture Series

2014: *Modern Approach to Exterior Powers of Irreducible $\mathbb{C}S_n$-modules*, Binghampton University Graduate Conference in Algebra and Topology

2012: *Geometric Algebra: A Unifying Mathematical Language,* G.R.E.A.T. Day, State College of New York at Genenseo

Posters

2017: *Real-Time, Automatic Calcium Image Segmentation via Topology*, Society for Neuroscience Annual Meeting

2017: *Using Persistent Homology for Automatic Neuron Detection in Calcium Imaging Data*, UB Neuroscience Research Day

2016: *Quantifying Network Structure During State Changes in Functional Brain Networks*, Society for Neuroscience Annual Meeting

2016: *Quantifying Network Structure During State Changes in Functional Brain Networks*, UB Neuroscience Research Day

Teaching

Instructor

2016: *Calculus II for Non-Majors*

2015: *Calculus II*

2014: *Calculus III*

Teaching Assistant

2017: *Numerical Analysis II*

2016: *Numerical Analysis I*

2016: *Advanced Linear Algebra*

2016: *Linear Algebra*

2015: *Advanced Linear Algebra*

2015: *Calculus II*

2015: *Calculus I for Non-Majors*

2014: *Abstract Algebra*

2014: *Calculus II for Non-Majors*

2013: *Calculus I*
2013: *Calculus III*
2013: *Calculus I for Non-Majors*
2012: *Calculus I for Non-Majors*

Workshops and Conferences

Workshops

2016: *Algebraic and Topological Methods for Biological Networks*, University of Pennsylvania
2014: *New directions in Lie Theory*, Center for Mathematical Research, University of Montreal

Conferences

2017: *Society for Neuroscience Annual Meeting,* District of Columbia
2016: *Union College Mathematics Conference*, Union College
2016: *UB Neuroscience Research Day,* University at Buffalo
2016: *Society for Neuroscience Annual Meeting,* San Diego
2015: *UB Neuroscience Research Day,* University at Buffalo, Medical Campus
2014: *AMS Sectional Meeting,* Eu Claire, Wisconsin
2013: *Binghampton University Graduate Conference in Algebra and Topology,* Binghampton University
2013: *New York State Regional Graduate Mathematics Conference,* Syracuse University