Priyanga Ganesan

Curriculum Vitae

Contact information

AFFILIATION	Texas A&M University, College Station, USA
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Education

2017 - 2022 (expected) **Ph.D in Mathematics** 4.0/4.0
Texas A&M University (TAMU), College Station, USA
Advisor: Dr. Michael Brannan
DISSERTATION: Quantum graphs and non-local games (in preparation)

2012 - 2017 **Integrated M.Sc (Mathematics)** 9.4/10
National Institute of Science Education and Research (NISER), India
Advisor: Prof. Anil Karn
MASTER'S THESIS: Spectral Theory for Ordered Spaces (view thesis)

Research interests

Functional analysis, operator algebras and quantum information theory. Specifically, quantum graphs, non-local games and operator systems.

Research publications & preprints

(1) **Quantum Majorization on Semifinite von Neumann Algebras**, Priyanga Ganesan, Li Gao, Satish K. Pandey and Sarah Plosker, 49 pages, *Journal of Functional Analysis*, 279 (2020) [arXiv:1909.10038].

(2) **The Quantum-to-Classical Graph Homomorphism Game**, Michael Brannan, Priyanga Ganesan and Samuel Harris, 40 pages, Submitted to *Journal of Mathematical Physics* [arXiv:2009.07229].

(3) **Spectral Bounds for Chromatic Number of Quantum Graphs**, Priyanga Ganesan, *Manuscript in preparation*.

Other articles

(1) **Operator Algebras Mentor Network: Supporting Early-Career Women Researchers**, Anna Duwenig, Kari Eifler, Priyanga Ganesan, Lara Ismert, Sarah Plosker and Karen Strung, To appear in the *European Women in Mathematics Newletter*

(2) **Student Engagement in an Online Math Classroom: A Pilot Study**, Priyanga Ganesan, *Manuscript in preparation*.

Research visits

Sept - Oct 2021 **Institute of Quantum Computing**, University of Waterloo, Canada. (5 week visit)

Grants

May 2021 **Texas A&M College of Science Diversity and Equity Small Grant**, $1900 USD,
Individualized Development Plan and Salary Negotiation Workshops,
(Jointly with Anne Shiu and Manaswinee Bezbaruah).

Feb 2020 **Campus Climate Grant Program**, $500 USD,
Awarded to the *Indian Graduate Student Association* at Texas A&M for its positive impact on campus climate. (I served as the Vice-President of the student organization that year)

Nov 2019 **Summer Math Foundation Grant**, $500 USD,
Awarded to the *Association for Women in Mathematics TAMU Chapter* to advance women's scholarship. (I served as the Vice-President of the student organization that year)

July 2019 **NSF Grant - DMS-1937317**, Co-PI, $8000 USD,
Conference grant - *Texas Women in Mathematics symposium 2020*,
(Jointly with Laura Matusevich (PI), Nida Obatake, Aleksandra Sobieska and Elise Walker).

Apr 2019 **Texas A&M College of Science Diversity and Equity Grant**, $2000 USD,
Conference grant - *Texas Women in Mathematics symposium 2020*,
(Jointly with Laura Matusevich, Nida Obatake, Aleksandra Sobieska and Elise Walker).

Mar 2019 **MAA Tensor Women and Mathematics Grant**, $6000 USD,
Conference grant - *Texas Women in Mathematics symposium 2020*,
(Jointly with Laura Matusevich, Nida Obatake, Aleksandra Sobieska and Elise Walker).

Fellowships & Awards

Fall 2022 **Dr·Joseph Newton Graduate Student Service Award**, Department of Mathematics, TAMU

2021 - 2022 **Greater Texas Foundation Southerland Aggie Leader Scholarship (SALS)**, Texas A&M

2021 - 2022 **Hutson Twins Scholarship** (Academic Excellence Award), Texas A&M

2021 - 2022 **Pi Omicron Graduate Brothers Endowed Aggie Ring Scholarship**,
Association of Former Students, Texas A&M

Apr 2021 **Adair Student Organization of the Year** awarded to Texas A&M AWM student chapter, $100. (I served as the President of the student organization that year)

Mar 2021 **2021 Buck Weirus Spirit Award**, Aggie Network, Texas A&M University

Nov 2020 **AWM Community Outreach Student Chapter Award** awarded to Texas A&M AWM student chapter. (I served as the Vice-President of the student chapter that year)

2020 - 2021 **CIRTL Teaching-As-Research Fellowship**, Texas A&M

2020 - 2021 **Association of Former Students Scholarship** (Academic Excellence Award), Texas A&M

2020 - 2021 **Southerland Aggie Leader Scholarship**, Association of Former Students, Texas A&M

2019 - 2020 **GPSG Aggie Core Values Award**, Texas A&M

2019 - 2020 **AB & Hazell H Carter Scholarship** (Academic Excellence Award), Texas A&M

2017 - 2019 **The N.W Naugle Fellow in Mathematics**, Graduate Fellowship, Texas A&M University

2017 Other awards *declined* for graduate position at Texas A&M:

Provost Doctoral Entrance Award for Women and
International Doctoral Student Award, University of Waterloo

Arenstorf Fellowship, Vanderbilt University

Presidential Fellowship, University of Houston

Junior Research Fellowship (Mathematics), CSIR, Govt. of India

Graduate Assistantship, Purdue University

Teaching Assistantship, University of Illinois Urbana-Champaign

2012 - 2017 **INSPIRE Scholarship**, Department of Science & Technology, Govt. of India

Summer 2016 **Summer Research Fellowship**, Indian Institute of Technology, Chennai (declined)

Summer 2015 **S.N. Bose Fellowship**: Indo-US fellowship for summer research

Summer 2015 **ICTS - S.N. Bhatt Excellence fellowship** (declined)

Summer 2014 **Summer Research Fellowship**, The Indian Academy of Sciences

2013 - 2015 **National Initiative for Undergraduate Science Fellowship** (Physics), Homi Bhaba Center for Science Education, India

Fall 2013 **Overall Topper Award** (for highest CGPA across the institute) and **Mathematics Batch Topper Award**, Semester III, NISER

Summer 2013 **Summer Fellowship**, Indian Statistical Institute, Chennai (declined)

Summer 2013 **Summer Research Fellowship**, Indian Institute of Technology, Gandhinagar (declined)

Spring 2013 **NISER Overall Topper Award** and **Batch Topper Award**, Semester II, NISER

2012 **KVS Merit Scholarship** : Top 1% scorer among 1.1 million students in *All India Senior School Certificate Examination*, CBSE

2011 Invited as **Prime Minister's Guest** to Republic Day Parade, New Delhi for *Outstanding Academic Performance* in Class X, CBSE exam.

2010 **KVS Merit Scholarship** for A1 grade in all subjects, AISSE-2010

Travel Awards

Aug 2021 Travel support for attending **Young Mathematicians in C*-Algebras** conference at University of Münster, Germany, $1500 USD. (NSF grant DMS-2000335) – *declined*

May 2021 Stipend for attending AIMS (online) workshop on **non-local games in quantum information theory**, $1000 USD

Mar 2021 Stipend for attending AIMS (online) workshop on **fusion categories and tensor networks**, $1500 USD

Jan 2021 **AMS Virtual Graduate Student Travel Grant** for attending Joint Mathematics Meetings 2021, $50 USD

Jan 2020 Travel support for attending **Quantum Symmetries Workshop** at MSRI, Berkeley $600 USD.

Jan 2020 Travel support for attending **Quantum Information Processing Conference** at Shenzhen, China, $950 USD. (NSF-grant DMS-1946395)

Oct 2019 Travel support for attending **East Coast Operator Algebras Symposium** at Ohio State University, Columbus, $800 USD. (NSF-grant DMS-1936283)

Sept 2019 Travel support from UCL for attending **Analytical and Combinatorial Aspects of Quantum Information Theory Workshop** at International Center of Mathematical Sciences, Edinburgh, 500 GBP.

Aug 2019 Travel support for attending **Young Mathematicians in C*-Algebras** conference ($\mathrm{YMC^*A}$ / $\mathrm{YWC^*A}$) at University of Copenhagen, Denmark, $1900 USD. (NSF-grant DMS-1900134)

June 2019 Travel support for attending **Summer Research Program on Quantum Symmetries** at Ohio State University, Columbus, $600 USD. (NSF-grant DMS-1654159)

May 2019 Travel support for attending **Thematic program on Operator Algebras, Groups and applications to Quantum Information** at ICMAT-Madrid, Spain, $1600 USD. (NSF-grant DMS-1901290)

Dec 2018 **Graduate Travel Award** by Department of Mathematics, Texas A&M for the conference *Recent Advances in Operator Theory and Operator Algebras* at ISI, Bangalore, $400 USD

Research Projects

PH.D DISSERTATION
2017 - 2022

Quantum Graphs (in progress)
Advisor: Dr. Michael Brannan, *Texas A&M University*
Developed a quantum chromatic number for quantum graphs by defining a quantum-to-classical non-local graph coloring game and obtained spectral lower bounds for it.

CIRTL TAR PROJECT
2020 - 2021

Student engagement in an online classroom (view report)
Faculty Mentor: Dr. Tamara Carter and Dr. Alexandra Foran, *TAMU*
Investigated student preferences and perceptions of the effectiveness of different engagement techniques in a synchronous online course (IRB2020-0864).

INDUSTRY PROJECT
July, 2020

Modeling equity-linked insurance benefits (view report)
Mentor: Marshall Lagani and Dr. Gary Hatfield, *Securian Financial*
Explored neural network methods and interpolation techniques to minimize the tradeoff between computational cost and accuracy in intraday estimation of the greeks Delta and Rho for reducing risks in equity-linked products.

MASTER'S THESIS
2015-2017

Spectral Theory for Ordered Spaces (thesis)
Supervisor: Prof. Anil Karn, *NISER, Bhubaneswar*
My thesis was an exposition on Alfsen & Shultz's order theoretic study of the spectral theorem, which generalizes the spectral theorem for von-Neumann algebras and JBW algebras.

INTERNSHIP
May - July, 2016

Equidistribution of Lattice points on Spheres (view report)
Supervisor: Prof. Jean-François Quint, *IMB, Université de Bordeaux, France*
Studied Duke's strategy of proving an equidistribution result for integral points on large spheres, using the theory of modular forms.

NIUS PROJECT
2013 - 2015

Measurement of Electron Mass using Compton Scattering (view report)
Supervisor: Prof. P.K. Joshi and Prof. Rudrajyoti Palit, *TIFR, Mumbai*
Determined rest mass energy of electron using Compton scattering of Gamma rays, detected with a High Purity Germanium detector.

INTERNSHIP
May - July, 2015

Quantitative Analysis of Trapping Stochastic Movers (view report)
Supervisor: Prof. Jeffrey Schenker, *Michigan State University, USA*
Computed hitting probabilities of bounded regions for certain self correlated random walks, using numerical simulations in MATLAB, for applications in pest control.

INTERNSHIP
May - July, 2014

Mathematical Modeling using Differential Equations (view report)
Supervisor: Prof. Peeyush Chandra, *Indian Institute of Technology, Kanpur*
Proposed a mathematical model to study the impact of awareness programs on drug addiction and performed quantitative analysis on the local stability of equilibrium states.

INTERNSHIP
May - July, 2013

Introduction to Dynamical Systems
Supervisor: Prof. Sitabhra Sinha, *Institute of Mathematical Sciences, Chennai*

Presentations given

Invited Talks

Mar 2022 Spectral bounds on quantum chromatic numbers, **AMS Sectional Meeting - special session on Recent Developments in Operator Algebras**, *Purdue University*

Jan 2022 Spectral bounds on chromatic number of quantum graphs, **Joint Mathematics Meetings - special session on The Interplay of Matrix Analysis and Operator Theory**, *Seattle*

Nov 2021 Spectral bounds on quantum chromatic numbers, **Functional Analysis Seminar, University of California San Diego**

Oct 2021 Spectral bounds for chromatic number of quantum graphs, **Operator Algebras Seminar, Purdue University** (online)

Oct 2021 Spectral bounds for chromatic number of quantum graphs, **QUASAR seminar**, *University of Ottawa*

Oct 2021 Spectral bounds for chromatic number of quantum graphs, **Virtual Quantum Symmetry Seminar**, *Ohio State University* (online)

Aug 2021 Quantum Graphs, **IWOTA special session on Operator Algebras in Quantum Theory**, *Lancaster* (online)

July 2021 Quantum Graphs, **Summer Informal Regional Functional Analysis Seminar (SUMIRFAS)**, *Texas A&M University*

Mar 2021 Quantum Graphs, **AMS - Gathering in Graduate Expository Mathematics (GIG'EM) Conference**, *Texas A&M University*

Mar 2021 Quantum Graphs, **Mathematical Physics and Operator Algebras seminar, Michigan State University** (online)

Feb 2021 Quantum-to-Classical Graph Homomorphisms, **Quantum Symmetries Student Seminar, Ohio State University** (online)

Feb 2021 Quantum Graphs, **Virtual Seminar on Operator Algebras and Quantum Information**

Jan 2021 Quantum Graph Homomorphism, **Joint Mathematics Meetings - special session on Advances in Operator Algebras** (online)

Dec 2020 Quantum Graph Homomorphism, **Analysis seminar, University of Glasgow, UK** (online)

Nov 2020 Quantum Graph Homomorphism, **C*-algebra seminar, Arizona State University** (online)

Nov 2020 Introduction to Quantum Graphs, **MathematiX Club**, NISER

Jun 2020 Understanding Quantum Graphs, **Research Experience for Undergraduates Summer Programs: Grad Research Talks**, TAMU

Dec 2019 Quantum Majorization in Infinite Dimensions, **Analysis seminar, Indian Institute of Technology, Kanpur**

Dec 2019 Quantum Majorization in Infinite Dimensions, **Analysis seminar, Indian Statistical Institute, Bangalore**

Dec 2019 Quantum Majorization in Infinite Dimensions, **Inverse Problems and Analysis seminar, University of Delaware**

Jan 2019 Factorization of identity map through large diagonal operators, **Mathematics Department Seminar, NISER**

Contributed Talks

Aug 2021 Quantum Graphs, **Young Mathematicians in C*-algebras (YMC*A)**, University of Münster

June 2021 Quantum Graphs, **Summer School in Operator Algebras** (online)

Apr 2021 Quantum Graphs, **Operator Theory Talks for Early Researchers (OTTER)**

Mar 2021 Quantum Graphs, **Southeastern Analysis meeting (SEAM)**

Feb 2021 Quantum Graphs, **Early Career Workshop in Operator Theory & Operator Algebras** (online)

Jan 2021 Quantum Graphs, **Groups, Operators and Banach Algebras Webinar**

May 2019 Introduction to Quantum Majorization, **Thematic program on Operator Algebras, Groups and Applications to Quantum Information - Workshop II**, *ICMAT, Madrid*

Feb 2019 Order structure on vector spaces, **AMS - Gathering in Graduate Expository Mathematics (GIG'EM) Conference**, *Texas A&M University*

Nov 2018 A factorization problem in l^p spaces, **Texas Women in Math Symposium**, *University of Houston, Texas*

Dec 2017 Spectral Theory for Jordan Algebras, **Texas Women in Math Symposium**, *Sam Houston University, Texas*

July 2015 Quantitative analysis of trapping stochastic movers, **Summer Undergraduate Michigan Mathematics Research Conference**, *Michigan State University*

Oct 2013 Ptolemy's theorem, **Madhava Mathematics Nurture Camp**, Kolkata

Poster presentations

Sept 2020 Quantum Majorization in Infinite Dimensions, **Virtual Heidelberg Laureate Forum** (online)

Jan 2020 Quantum Majorization in Infinite Dimensions, **Connections for Women: Quantum Symmetries**, *MSRI, Berkeley*

Jan 2020 Quantum Majorization in Infinite Dimensions, **Quantum Information Processing Conference**, *Shenzhen, China*

Aug 2015 Quantitative analysis of trapping stochastic movers, **Student Symposium for S.N.Bose Scholars Program**, *Indian National Science Academy, New Delhi*

July 2015 Quantitative analysis of trapping stochastic movers, **Mid-Michigan Symposium for Undergraduate Research Experiences**, *Michigan State University*

Local Seminar Talks

Apr 2020 Introduction to Quantum Graphs, *Graduate Student Seminar*, Texas A&M

Nov 2019 Quantum Majorization in Infinite Dimensions, *Linear Analysis Seminar*, Texas A&M

Jan 2020 Mixed states and general quantum operations, *Working Seminar in Quantum Computation & Quantum Information*, Texas A&M

Apr 2019 Modular properties of the Haar state, *Working Seminar on Quantum Groups*, Texas A&M

Feb 2019 Quantum dimension & orthogonality relations, *Working Seminar on Quantum Groups*, Texas A&M

Feb 2019 Representations of compact quantum groups, *Working Seminar on Quantum Groups*, Texas A&M

Dec 2018 C*-Algebra of Compact Operators, *Reading Seminar on Intro to Operator Algebras*, Texas A&M

Oct 2018	Von Neumann entropy and majorization, *Working Seminar in Quantum Computation & Quantum Information*, Texas A&M
Apr 2017	Spectral theory for Jordan Algebras, *Term presentation*, NISER
Nov 2016	Spectral theory for Ordered Spaces, *Term presentation*, NISER
Apr 2016	Compressions on Ordered Vector Spaces, *Term presentation*, NISER
Nov 2015	Smooth Projections on Ordered Vector Spaces, *Term presentation*, NISER
Dec 2015	Measurement of electron mass using Compton scattering, *DNAP Lab Seminar*, Tata Institute of Fundamental Research, Mumbai
Aug 2014	Mathematical Modeling, *MathematiX Club Student Seminar*, NISER

Outreach Talks

Nov 2021	The wolves and sheep problem, (Beginner level) **Math Circle**, TAMU
Feb 2019	Knights and Liars, (Beginner and Intermediate level) **Math Circle**, TAMU
Dec 2019	Traveling through the checkerboard, **Math Circle**, TAMU
July 2019	Pick's Theorem, **Summer Educational Enrichment in Math Camp**, TAMU
Apr 2019	The $a + b + ab$ problem, **Math Circle**, TAMU
Aug 2018	Four Color Theorem, **Summer Educational Enrichment in Math Camp**, TAMU
Mar 2015	Types of Infinities, **Science Open Day**, *NISER*
Mar 2014	Game Theory, **Science Open Day**, *NISER*

Workshops and conferences attended

Dec 2022	**Women in Operator Algebras Workshop-II** (invited), *Banff International Research Station*
June 2021	**Summer School in Operator Algebras**, University of Ottawa
June 2021	**Canadian Operator Theory Symposium** (online)
May 2021	**AIM Workshop: Non-local games in quantum information theory** (invited), Online
Mar 2021	**Brazos Analysis Seminar** (online)
Mar 2021	**AIM Workshop: Fusion categories and tensor networks** (invited), Online
Feb 2021	**Early Career Workshop in Operator Theory & Operator Algebras** (online)
Feb 2021	IPAM Workshop: **Entropy Inequalities, Quantum Information & Quantum Physics**
Feb 2021	**Quantum Information Processing (QIP) conference** (online)
Jan 2021	IPAM Program: **Actions of Tensor Categories on C*-algebras**, (online)
Jan 2021	**Joint Mathematics Meeting**, (online)
Nov 2020	**Brazos Analysis Seminar**, (online)
Oct 2020	**East Coast Operator Algebras Symposium**, *University of Virginia* (online)
Oct 2020	**TAMU Gathering in Graduate Expository Mathematics (GIG'EM) Conference** (online)
Oct 2020	**Vaishvik Bhartiya Vaigyanik (VAIBHAV) Summit** (online)
Sept 2020	**Virtual Heidelberg Laureate Forum** (online)
Sept 2020	**Science & Research Opportunities in India (Sci-ROI) Annual Meet** (online)
Aug 2020	**2TART Presents: Operator Theory with its Applications** (online)

July 2020 **Math to Industry Boot Camp V** (online),
Institute for Mathematics and its Applications, University of Minnesota.

May 2020 **48th Canadian Operator Symposium** (online)

Jan 2020 **Connections for Women: Quantum Symmetries**, *MSRI, Berkeley*

Jan 2020 **Quantum Information Processing Conference**, *Shenzhen, China*

Nov 2019 **QLA meets QIT** (invited), *Purdue University*

Nov 2019 **Brazos Analysis Seminar** (Fall 2019 Meeting), *Baylor University, Texas*

Oct 2019 **East Coast Operator Algebras Symposium**, *Ohio State University, Columbus*

Sept 2019 **Analytical and Combinatorial Aspects of Quantum Information Theory Workshop**, *International Center of Mathematical Sciences, Edinburgh*

Aug 2019 **Young Mathematician's in C*-algebras (YMC*A / YWC*A)**,
University of Copenhagen, Denmark

Jul 2019 **Summer Informal Regional Functional Analysis Seminar (SUMIRFAS)**, TAMU

June 2019 **Summer Research Program on Quantum Symmetries**, *Ohio State University*, Columbus

May 2019 **Thematic program on Operator Algebras, Groups and Applications to Quantum Information - School II**, *ICMAT, Madrid*

Nov 2018 **Women in Operator Algebras Workshop**, *Banff International Research Station, Canada* (participated via video conferencing)

Oct 2018 **East Coast Operator Algebras Symposium**, *Texas Christian University, Fort Worth*

Sep 2018 **Brazos Analysis Seminar** (Fall 2018 Meeting), *Texas A&M University*

Aug 2018 **Summer Informal Regional Functional Analysis Seminar (SUMIRFAS)**, *Texas A&M University*

May 2018 **Great Plains Operator Theory Symposium (GPOTS)**, *Miami University, Ohio*

Mar 2018 **AMS Gathering in Graduate Expository Mathematics (GIG'EM) Conference**, *Texas A&M University*

Mar 2018 **Brazos Analysis Seminar** (Spring 2018 Meeting), *Baylor University, Texas*

Dec 2017 **Texas Women in Math Symposium**, *Sam Houston University, Texas*

Nov 2017 **Brazos Analysis Seminar** (Fall 2017 Meeting), *University of Houston, Texas*

Sep 2017 **Women in STEM Conference**, *Texas A&M University*

Feb 2017 **Non-Commutative Analysis Conference**, *Institute of Mathematical Sciences, Chennai*

Mar 2016 **Advanced Training in Mathematics Workshop on Probability and Representation Theory**, *Institute of Mathematical Sciences, Chennai*

Feb 2015 **International workshop on Applications of Systems and Mathematical Biology in Public health**, *NISER, Bhubaneswar*

Dec 2014 **Annual Foundation School - I in Mathematics**, *NISER, Bhubaneswar*

Dec 2013 **6th Science Conclave - A Congregation of Nobel Laureates**, *Indian Institute of Information Technology, Allahabad*

Oct 2013 **Madhava Mathematics Nurture Camp**, *St. Xavier's College, Kolkata*

Jul 2013 **Mathematics: aspects, prospects and a bit of history**, *Institute of Mathematical Sciences, Chennai*

Jun 2013 **National Initiative for Undergraduate Science - Physics** (Camp X), *Homi Bhaba Center for Science Education, Mumbai*

Dec 2012 **National Science (Vijyoshi) Camp**, *Indian Institute of Science, Bangalore*

Teaching Experience

- **Graduate Teaching Assistant**, Texas A&M University *Fall 2017 - present*

Fall 2021	Grader	Math 653: Algebra-I
Spring 2021	Instructor of Record	Math 168: Finite Mathematics (online)
Fall 2020	Instructor of Record	Math 168: Finite Mathematics (online)
Spring 2020	Recitations & Lab Instructor	Math 151: Engineering Calculus I
Fall 2019	Recitations Instructor	Math 150: Functions, Trigonometry & Linear systems
Summer(II) 2019	Instructor of Record	Math 142: Business Calculus
Spring 2019	Recitations & Lab Instructor	Math 152: Engineering Mathematics II
Fall 2018	Recitations Instructor	Math 150: Functions, Trigonometry & Linear systems
Summer(I) 2018	Help session Instructor	Math 152: Engineering Mathematics II
Spring 2018	Grader	Math 436: Introduction to Topology
Fall 2017	Grader	Math 601: Methods of Applied Mathematics I

  - As **Instructor of Record**: I was responsible for all aspects of the course including preparing course notes, delivering lectures, writing exams and quizzes, holding office hours, managing course grades & supervising TAs.
  - As **Recitations & Lab Instructor**: I conducted weekly computer lab sessions in Python, taught recitation (tutorial) classes, and graded lab reports and quizzes.

- **Private Tutor**, College Station *Spring & Fall 2019*
  - Individually tutored engineering graduate student.
- **Teaching Assistant**, NISER *Spring 2017*
  - Conducted weekly tutorial sessions and graded exams.

Teaching professional development

- **CIRTL Practitioner Certificate: Teaching-as-Research Fellow**, Texas A&M (2020 - 2021)
  - Designed and implemented a year-long teaching experiment at Texas A&M University to assess student engagement in an online classroom. A research paper about my findings is currently in preparation.
- **CIRTL Associate-Fellow of the Academy for Future Faculty**, Texas A&M (Apr 2021)
  - Completed a semester long teaching and professional development training to prepare for a teaching career, comprising of 6 teaching seminars, classroom observations, preparation and feedback on teaching portfolio.
- **Mathematics Teaching and Communication** - Special Topics in Professional Preparation (Spring 2020)
  - Completed a 3-credit semester long course on teaching mathematics (to undergraduate students), scientific writing, presenting mathematics and career prep. Grade received: A.
- Course on **Mathematical Communication and Technology** (Summer 2018)
  - Completed a 5-week course on techniques of oral, written and electronic communication of mathematics, and effective classroom and seminar presentation. Grade received: A.

Mentoring Experience

2019 - present **Graduate Mentor**, Directed Reading Program in Mathematics, TAMU
(supervised undergraduate students on a semester-long reading project in Mathematics)

- Spencer Ellis, *Differential Geometry for Physics* (Fall 2021)
- Yeojoon Moon, *Stability Analysis of Linear Systems* (Fall 2020)
- Jaqueline Gonzalez, *One & Two Dimensional Flows* (Spring 2020)
- Yun Lu, *Unsupervised Learning: K-Mean Clustering & PCA* (Fall 2019)
- James Woodcock, *Convergence of Series in Banach Spaces* (Spring 2019)

2019 - present **Peer Mentor**, Peer Mentoring Program in Mathematics, TAMU
(paired with an incoming graduate student in Mathematics to help them navigate through graduate life)

- Manaswinee Bezbaruah (2019 - 2020)
- Valentia Fragkiadaki (2019 - 2020)
- Jennifer Zhu (2020 - 2021)

2020 - 2021 **Mentor**, Khorana and Bose Mentor Network
(Advice incoming Khorana-Bose scholars on research, graduate school, internships in the US)
Mentees: Saksham Gupta, Sheth Dev Yashpal, N K U Sarada Anoushka

2018 - present **Departmental Mentor**, Indian Graduate Students Association, TAMU
(help incoming Indian graduate students to adjust to the new country and serve as a resource person for the Math department)

June 2019 **Counselor**, Summer Mathematics Research Training (SMART) High School Camp, *TAMU*
(mentored a group of 5 high school students during a two-week summer Math camp)

2018 - 2019 **Counselor**, Grad Camp, *TAMU*
(introduced group of 12 incoming graduate students to Aggie traditions and resources on campus)

Mentoring programs organized

Aug 2020 - July 2022 **Operator Algebras Mentor Network**
I serve as a board member for this international network which aims to retain young women and under-represented groups in operator algebras, by pairing them with junior and senior mentors (outside their parent institution) who can provide professional advice and act as a trusted ally in the event of abuse or harassment.

Feb 2020 - Apr 2021 **Mentoring webinars for Indian graduate students**, Texas A&M University
Co-organized monthly webinars on visa applications, financing education, finding apartments etc to help incoming Indian students acclimatize to the new country and graduate life.

Fall 2018 - present **Mentoring Lunches for Women in Mathematics**, TAMU Math Department
Co-organized monthly themed lunches where women from all career stages in the department interact and discuss professional development topics, such as research, teaching, networking and work-life balance.

Fall 2018 - present **Peer Mentoring Program in Mathematics**, TAMU Math Department
Facilitated the transition to graduate school by pairing incoming graduate students with senior graduate students, who serve as peer mentors and organized monthly group meetings to share peer advice on navigating graduate school.

Service

Leadership

2021 - 2022	**Co-founder & Co-organizer**, Individualized Development Plan for Math graduate students, Texas A&M
2021 - 2022	**Secretary**, Association for Women in Mathematics, Texas A&M Chapter President (2020 - 2021) Vice-President (2019 - 2020) Treasurer (2018 - 2019)
2020 - 2021	**Vice-President** of Mentoring, Indian Graduate Students Association, TAMU Senior Director (Summer 2020) Director (Spring 2020)
Jan 2019 - Apr 2021	**Senator**, Graduate & Professional Student Government, TAMU
Spring 2019 -	Mathematics Delegate, **Dean's Graduate Advisory Council**, College of Science, Texas A&M
Fall 2020	**Sciences Career Fair Ambassador**, TAMU
May 2020 -	**Point of Contact for Texas A&M**, Science Research Opportunities in India (Sci-ROI)
Feb 2020	**Co-organizer**, Texas Women in Math Symposium (TWIMS)
2018 - 2020	**Departmental Representative**, Women in Science and Engineering (WISE), TAMU
Spring 2020	**Staff Advisor**, Alternative Spring Break Organization, TAMU
2019 - 2021	**Treasurer**, Bhakti Yoga Club, TAMU
Feb 2019, 2018	**Co-organizer**, Annual Mathematics & Statistics Fair, Texas A&M
Feb 2019	**Student Ambassador**, Hagler Institute for Advanced Study Gala, TAMU
2015 - 2017	**Student Coordinator**, Nature Club, NISER

Committees & Panels served

2020 - 2022	**Board Member**, Operator Algebras Mentor Network
2020 - 2021	**Graduate Instructional Committee Delegate**, College of Science, Texas A&M
Fall 2020	**Math Graduate Student Diversity Committee**, TAMU
May 2020	**AFS College Level Teaching Awards Selection Committee**, Texas A&M
Feb 2020, 2019	**Susan M. Arseven Memorial Award Selection Committee Member**, TAMU
Jan 2019	**Panelist**, REU Information Session, TAMU
Nov 2018	**Ethel Award Selection Committee Member**, Ethel Ashworth-Tsutsui Memorial Awards for Research and Mentoring, TAMU
Sep 2018	**Panelist**, "Adjusting to Grad School", First Year Graduate Student Seminar, TAMU
Feb 2018	**Planning Committee Member**, Mathematics & Statistics Fair, TAMU
Jan 2018	**Panelist**, REU Information Session, TAMU

Outreach

2017 - present	**Volunteer**, Math Circle, TAMU
Oct 2020	**Student Volunteer**, Annual TX-LA SIAM Meeting (online)
Mar 2020, 2019	**Science Judge**, Texas Regional Junior Science Bowl Competition

Oct 2019	**Volunteer**, Chemistry Open House, Texas A&M
Oct 2019,18,17	**Judge**, Texas Junior Academy of Science Competition
Aug 2019, 2018	**Graduate Instructor**, Summer Educational Enrichment in Math, TAMU
Mar 2019, 2018	**Judge** (Oral & poster presentation), Student Research Week, TAMU
Feb 2019, 2018	**Science Judge**, Texas Regional High School Science Bowl Competition
Jan 2019, 2018	**Judge** (Math/Computer Science division), Texas Junior Science and Humanities Symposium
Nov 2018	**Proctor**, Mathworks Math Contest, TAMU
Oct 2018, 2017	**Question Writer**, Derivative Bee Contest, TAMU
Sept 2018	**Volunteer**, Sciences Career Fair, TAMU
Jun 2018	**Proctor**, 2018 Elementary School National Mathematics Championship, USA
Apr 2018	**Grader & Proctor**, Texas Science Olympiad
Mar 2018	**Question Writer**, Integral Bee Contest, TAMU
Oct 2017	**Grader**, Texas High School Math Contest
2017 - 2019	**Volunteer**, Math & Stat Fair, TAMU
2013 - 2017	**Volunteer**, Science Open Day, *NISER*

Review Activities

Refereed articles for the book - *Association for Women in Mathematics 50th Anniversary Volume* (Springer Series)

Professional Memberships

Aug 2017 - present	American Mathematical Society **(AMS)**
Aug 2017 - present	Association for Women in Mathematics **(AWM)**
Aug 2017 - present	Mathematical Association of America **(MAA)**

Technical skills

- **Programming Languages:** C++, Python, R, HTML
- **Operating Systems:** Linux, Mac OS X, Windows XP
- **Mathematics Tools:** MATLAB , Scilab, Octave, LaTeX, GNUplot , MySQL
- **Certifications & Courses:**
  - (Linkedin learning) Artificial Intelligence Foundations: Machine Learning, Neural Networks, Introduction to Quantum Computing, Introduction to Quantum Cryptography — March 2021
  - (Coursera) *Neural Networks and Deep Learning* — (in progress)
  - (Udemy) *Machine Learning and Data Science 2021* — (in progress)
  - *Introduction to Quantum Computing* course, TAMU High Performance Research Computing — April, 2019

Miscellaneous

Languages: English, Hindi, Sanskrit, Tamil

Extracurricular: National level Chess player (FIDE rating: 1600)
Recipient of *Rajya Puraskar* - Bharat Scouts and Guides (2008)

Industry professional development

- **Erdös Institute Data Science Bootcamp** (Sept - Dec 2021) *In progress*
  - Taking a 11-week course in data science covering **regression, classification, unsupervised learning and neural network** topics and attending weekly seminars on industry careers.
  - Working on a team project focused around machine learning research.
- **IDP Career Exploration Summer Series**, Texas A&M Career Center (June - Aug 2021)
  - Completed an 8-week summer Individual Development Plan (IDP) series to explore academic and non-academic career paths after graduate school.
  - Identified and explored careers that align with my interests, skills and values through IDP assessments, informational interviews and SWOT-C analysis.
- **Math-to-Industry Bootcamp**, IMA, University of Minessota (June - July 2020)
  - Completed intensive mini-courses in **python programming, R, statistics, machine learning, stochastic modeling and optimization.**
  - Collaborated with six team members and two industry partners from Securian Financial to research solutions to minimize time and cost of financial hedging computations

Selected coursework

- **Analysis:** Functional analysis , Operator algebras , Harmonic analysis , Complex analysis , Probability theory
- **Algebra:** Linear algebra , Abstract algebra (groups, rings, Galois theory) , Representation theory
- **Applied Math:** Advance Partial Differential Equations (PDEs) , Stochastic processes , Optimization theory
- **Geometry:** Topology , Differential geometry , Algebraic topology
- **Miscellaneous:** Algorithms , Statistics , Cryptology , Algebraic number theory
- **Quantum science:** Quantum Mechanics , Quantum information theory , Topological quantum computing , Non-local games and quantum correlations

Academic References

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