

AASAIMANI THAMIZHAZHAGAN

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M 05, Ramanujan School of Mathematical Sciences, R Venkat Raman Nagar, Kalapet Pondicherry - 605 014, India

ACADEMIC POSITION(S)

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| Pondicherry University • Kalapet, Pondicherry, India <i>Guest Faculty</i> • Department of Mathematics | Oct 2024 – Present |
| University of Waterloo • Waterloo, ON, Canada <i>Postdoctoral Fellow and Sessional Instructor</i> • Department of Pure Mathematics Worked with: Dr. Nico Spronk, Dr. Brian E. Forrest | Sept 2022 – May 2024 |
| Conestoga College • Kitchener, ON, Canada <i>Part-time Faculty</i> • School of Business | August 2023 – Jan 2024 |
| University of Winnipeg and University of Manitoba • Winnipeg, MB, Canada <i>Postdoctoral Fellow and Contract Academic Staff</i> • Department of Mathematics and Statistics Worked with : Dr. Ross Stokke, Dr. Matthew Wiersma, Dr. Yong Zhang, Dr. Fereidoun Ghahramani | Sept 2021 – Aug 2022 |

EDUCATION

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| University of Waterloo • Waterloo, ON, Canada <i>Doctor of Philosophy</i> • Pure Mathematics Thesis - On the structure of invertible elements in certain Fourier-Stieltjes algebras Advisors: Dr. Nico Spronk, Dr. Brian E. Forrest | September 2016 – August 2021 |
| National Institute of Science Education and Research (NISER) • Odisha, India <i>Integrated Masters of Science</i> • Mathematics Thesis - Fourier algebras, amenability and its relations with representation theory Advisor: Dr. Varadharajan Muruganandam | July 2011 – May 2016 |

TEACHING AND RESEARCH INTERESTS

Teaching: Mathematical proofs, single- and multi-variable calculus, linear algebra, real analysis, complex analysis, functional analysis, measure theory and Lebesgue integration, harmonic analysis, topology, and group theory.
Research: Functional analysis and its intersection with group theory.
Non-commutative harmonic analysis, representation theory of locally compact groups

PUBLICATIONS

1. (with Brian E. Forrest and John Sawatzky) *Arens regularity of ideals in $A(G)$, $A_{cb}(G)$ and $A_M(G)$* , J. Iran. Math. Soc. **4** (2023), no. 1, 5–25. MR 4614855 arXiv:2302.05699 DOI: 10.30504/jims.2023.385500.1091
2. (with Brian E. Forrest and John Sawatzky) *Invariant subspaces in the dual of $A_{cb}(G)$ and $A_M(G)$* , Ann. Math. Sci. Appl. **8** (2023), no.2, 239–267. MR 4626916. arXiv:2304.06195 DOI: 10.4310/AMSA.2023.v8.n2.a3
3. On the structure of invertible elements in certain Fourier-Stieltjes algebras. *Studia Mathematica*, **257** (2021), no. 3, 347–360. MR 4201439 DOI: 10.4064/sm200122-12-5
4. (with Brian E. Forrest and John Sawatzky) *Semisimplicity of the second dual of $A_{cb}(G)$ and $A_M(G)$ and weak-amenability of certain ideals in them-* In Preparation.
5. (with Nico Spronk and Ross Stokke) *On the structure of homomorphisms between certain Fourier-Stieltjes algebras-* In Preparation
6. (with Nico Spronk and Aleksa Vujičić) *Local Fell Groups* - In Preparation.

TEACHING EXPERIENCE

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| Instructor , BTMT 171: Mathematics I for engineers (2 Classes: ECE + (CSE+ENE) = 120 students) <i>Pondicherry University, Ramanujam School of Mathematical Sciences</i> | Sep '25 - Dec '25 |
| Instructor , BTMT 172: Mathematics II for engineers (2 Classes: ECE + CS = 90 students) <i>Pondicherry University, Ramanujam School of Mathematical Sciences</i> | Feb '25 - May '25 |
| <ul style="list-style-type: none">• Co-coordinated exams and course flow across five engineering cohorts.• Delivered 4 hours of original in-person lectures weekly for two sections.• Covered partial differential equations, Laplace and inverse Laplace transforms, Fourier transforms, and Fourier series with engineering applications.• Assessed students through two midterms, three assignments, and a final exam. | |
| Instructor , BTMT 171: Mathematics I for engineers (2 Classes: ECE + CS = 90 students) <i>Pondicherry University, Ramanujam School of Mathematical Sciences</i> | Nov '24 - Feb '25 |
| <ul style="list-style-type: none">• Co-coordinated exams and course alignment across five engineering cohorts.• Delivered 4 hours of original in-person lectures weekly for two sections.• Taught linear algebra, ordinary differential equations, multivariable calculus, and integral theorems. | |

- Evaluated students through two midterms, four assignments, and a final exam.

Sole Instructor, ECE 206/MATH 212: Advanced Calculus 2 for Electrical Engineers (33 students)
University of Waterloo, Faculty of Mathematics

Fall 2023

- Delivered 2.5 hours of original in-person lectures weekly and provided supplementary course notes for the Möbius-based curriculum.
- Maintained active engagement on Piazza and offered extended office hours as needed.
- Guided the TA for effective weekly tutorials using a two-way feedback process.
- Used Crowdmark for all assessments and Odyssey for exam seating.

Instructor, MATH 71775: Business Math (20 students)
Conestoga College, School of Business

Fall 2023

- Delivered a 3-hour weekly in-person lecture for one section of a coordinated course.
- Prepared interactive JavaScript-enhanced lecture webpages aligned with a BOPPPS lesson plan.
- Managed the eConestoga course shell using tools like Intelligent Agents, Progress Snapshot, and the Instructional Plan builder.
- Used Lyryx for all assignments and quizzes

Instructor, Math 137: Calculus I for Honours Math (58 students)
University of Waterloo, Faculty of Mathematics

Fall 2022

- Delivered 2.5 hours of original in-person lectures weekly for one of twelve sections.
- Held extensive weekly office hours supporting both struggling and advanced students.
- Actively contributed to [Piazza](#), guiding students through follow-up conceptual questions.

Sole Instructor, Math 4101 : Complex Analysis(5 students)
University of Winnipeg, Department of Mathematics and Statistics

Winter 2022

- Delivered 2.5 hours of lectures weekly in a hybrid format (online first half; live-streamed in-person second half).
- Adapted instruction for students with varied mathematical backgrounds and fostered an encouraging learning environment.
- Held weekly extended office hours and used Crowdmark for all assessments.

Instructor, Math 1301 : Applied mathematics for Business and Administration(49 Students)
University of Winnipeg, Department of Mathematics and Statistics

Fall 2021

- Collaborated with a parallel online instructor to coordinate exams and course structure.
- Delivered two 75-minute weekly in-person lectures.
- Developed Canada-specific financial examples and created handwritten lecture notes.
- Posted assignments on WebAssign after each lecture and held weekly office hours.

Instructor Math 116: Calculus for Engineering for management engineers(85 students)
University of Waterloo, Faculty of Mathematics

Fall 2019

- Delivered 2.5 hours of in-person weekly lectures in a coordinated multi-section course.
- Collaborated on exam and assignment design and supervised final grading.
- Produced handwritten lecture notes with worked examples and conceptual explanations often missing from textbooks.
- Provided intensive office hours with individualized support.

Graduate Teaching Assistant

Fall 2016 – August 2021

University of Waterloo, Department of Pure Mathematics

- Led tutorials, quizzes, and graded assessments for undergraduate courses in calculus and linear algebra.
- Supported upper-year courses (real analysis, measure theory, Fourier analysis, complex analysis) through grading, office hours, and proof-writing guidance.
- Provided extensive written feedback for MMT (online Master of Mathematics for Teachers) courses and facilitated study groups.
- Offered weekly one-on-one and group support in the Math Faculty Tutorial Centre.

PROFESSIONAL/ACADEMIC DEVELOPMENT

CSIR-UGC NET Coach for Math Majors Professional Service
Pondicherry University, Equal Opportunity Cell

May 2025 – Present

- Provided personalised coaching to undergraduate and postgraduate students, focusing on conceptual clarity, problem-solving strategies, and exam readiness for CSIR-UGC NET-mathematics subject.

Understanding Outcomes-Based Education (OBE) and Curriculum Micro-credential
Conestoga College, Teaching and Learning Department

Aug 20 - Sep 3, 2023

- Completed 2 hours of synchronous and 4 hours of asynchronous training on OBE, learning outcomes, and course outline design.
- Examined OBE principles: backward design, student-centered learning, results-focused outcomes, and measurability.
- Conducted a course outline quality audit by aligning program learning outcomes with course learning outcomes (CLOs) and analyzing CLO elements (stem, verb, context, criterion) using Bloom's taxonomy.
- Reviewed evaluation structures to ensure measurability of CLOs.

Active Learning Leading to Assessment Micro-credential
Congestoga College, Teaching and Learning Department

Sep 4 – 17, 2023

- Completed 4 hours of synchronous and 2 hours of asynchronous training on active learning, lesson planning, classroom management, and assessment.
- Explored frameworks including the didactic triangle, schema theory, BOPPPS, and the zone of proximal development.
- Discussed strategies for intercultural sensitivity and inclusive teaching.
- Examined assessment design, academic integrity, and student accommodations, with emphasis on rubrics and structured marking tools.
- Participated in group discussions on classroom management challenges.

Congestoga's LMS and Technologies for Teaching Micro-credential
Congestoga College, Teaching and Learning Department

Aug 20 - Sep 10, 2023

- Trained in configuring course shells and gradebooks in eCongestoga (LMS) and implementing essential course elements.
- Explored communication, assessment, and instructional tools within the LMS to support effective teaching.

Graduate Student Instructor Training Seminar

Winter 2019

University of Waterloo, Faculty of Mathematics

- Participated in interactive teaching workshops with peer feedback on lesson plans and course materials.
- Attended math-specific sessions on lesson planning, assessment design, student motivation, and lecture delivery.
- Designed and presented three mini-lectures in real analysis and observed multiple classroom teaching sessions.

Learning Seminars

Fall 2016 – Summer 2024

University of Waterloo, Department of Pure Mathematics

- Organized and presented talks in learning seminars on Fourier-Stieltjes algebras and measure algebras.
- Contributed to seminars on C^* -algebras and Finite Dimensional Approximations, Stationary characters on lattices of semisimple Lie groups, rigid C^* tensor categories, Fourier-Stieltjes algebra of such categories, and harmonic analysis learning seminar on Poisson-Furstenberg boundary, Figa-Talamanca Herz algebras.
- Regularly attended departmental analysis seminars, graduate colloquia, and graduate seminars.
- Advised Undergraduate Student Research Assistants on their mathematical projects.
- Virtual seminars: [Groups, Operators, and Banach Algebras Webinar](#), [UK Virtual Operator Algebras Seminar](#), [2TART Seminar series and Conference](#)

AWARDS AND HONOURS

RECEIVED AT UNIVERSITY OF WATERLOO, WATERLOO, ON, CANADA

- International Doctoral Student Award Fall 2016 – Spring 2020
- Susan and Janoes Aczel Graduate Scholarship Winter 2018 – 2020 and Fall 2018

RECEIVED AT NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, ODISHA, INDIA

- INSPIRE Fellowship July 2011 – May 2016
- Summer Research Fellowship, Indian Academy of Sciences, Bangalore, India Summer 2013
- Cleared CSIR-UGC-NET for JRF with rank 33 June 2016

TALKS

Invited:

- "Invariant subspaces in the Dual of $A_{cb}(G)$ and $A_M(G)$ ", CAHAS 2023, University of St. Boniface June 15–16, 2023
- "On the structure of invertible elements in certain Fourier-Stieltjes Algebra", National Seminar on Algebra and Graph Theory, Pondicherry University Canadian Abstract Harmonic Analysis Symposium, Banff International Research Station Department Seminar Series, University of Winnipeg Groups, Operators, and Banach Algebras Webinar, Online Virtual Math Fest, Institute of Mathematical Sciences, Chennai (Online) Banach Algebras and Applications, University of Manitoba September 24, 2021 August 18, 2020 July 24, 2020 July 18, 2019
- "On the interplay of harmonic analysis, combinatorics, additive number theory, and ergodic theory", Joint PM/CO Grad Colloquium, University of Waterloo December 3, 2020
- "Uncertainty principles and Fourier analysis", Grad Student Colloquium, University of Waterloo November 27, 2018

Presentations:

- "On the structure of invertible elements in certain Fourier-Stieltjes Algebra", Analysis Seminar in Pure Mathematics, University of Waterloo Grad Seminar in Pure Mathematics, University of Waterloo September 18, 2019 May 15, 2019

- "Analytic discs in the maximal ideal space of H^∞ ",
Grad course talks on Hardy spaces, University of Waterloo December, 2017
- "Perturbations of approximately finite-dimensional C^* -algebras",
Grad course talks on K-theory of C^* -algebras, University of Waterloo April, 2017
- "Amenability and its relation with representation theory",
Term Presentation, National Institute of Science Education and Research December, 2015
- "Sharkovsky's Theorem",
Term Presentation, National Institute of Science Education and Research April, 2015

CONFERENCES/WORKSHOPS/SEMINARS PARTICIPATION

- [International Conference on Special Functions & Applications \(ICSFA-2025\)](#)
Pondicherry University, Puducherry Nov 20–22, 2025
- [National Workshop on Python for Scientific Computing and Applications \(PSCA-2025\)](#)
Maulana Azad National Institute of Technology (MANIT), Bhopal (Online) June 16–20, 2025
- [National Seminar on Algebra and Graph Theory](#), Pondicherry University, Puducherry Feb 19–22, 2025
- [Canadian Abstract Harmonic Analysis Symposium\(CAHAS\)](#), University of St. Boniface, Winnipeg June 15–16, 2023
- [A Celebration of Great Math Education Initiatives](#), FYMSiC Online Meet Up Feb 28, 2023
- [Canadian Abstract Harmonic Analysis Symposium\(CAHAS\) 2020](#), BIRS, Banff June 17–19, 2022
- [Virtual Math Fest](#), Institute of Mathematical Sciences, Chennai (Online) July 20–26, 2020
- [Canadian Operator Symposium \(COSy\)](#), Fields Institute, Online May 25–29, 2020
- [Banach Algebras and Applications](#), University of Manitoba, Winnepeg July 11–18, 2019
- [Canadian Abstract Harmonic Analysis Symposium\(CAHAS\)](#), Carleton University, Ottawa May 31–June 2, 2018
- [Canadian Abstract Harmonic Analysis Symposium\(CAHAS\)](#), University of Manitoba, Winnepeg May 23–25, 2017
- [Canadian Operator Symposium\(COSy\)](#), Lakehead University, Thunder Bay May 29–June 2, 2017
- Workshop on Fourier and signal analysis by G. B. Folland, NISER, Bhubaneswar December 2015

TECHNICAL SKILLS

- Programming languages: C++, Shell, Gnuplot.
- Efficient typesetting with L^AT_EX, Microsoft Office Suite, D2L
- Languages: Tamil (Native), English and Hindi (Fluent), Odia, Spanish and French (Basic)

EXTRA CURRICULAR ACTIVITIES

- Attended UWATERLOO Gamelan Ensemble courses. Performed several pieces ([Gilak](#), [Penarik Becak](#), [Sekar Jepun](#), [Puspa Mekar](#)) at the Humanities Theatre - University of Waterloo, Canadian Mathematical Society 2019 Winter Meeting Inaguration - Chelsea Hotel Toronto, Engineering International Fair - University of Waterloo
- Card games, Trekking, Hiking. Successfully completed 6-day [SAR Pass trek](#), Parvati Valley, Kullu, Himachal Pradesh.

ACADEMIC REFERENCES

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| Dr. Brian E. Forrest (Professor (Retd.)) (for Teaching and Research) | Department of Pure Mathematics University of Waterloo, Canada ✉ beforres@uwaterloo.ca , ☎ +1 (519) 888-4567 ext. 35569 |
| Dr. Nico Spronk (Professor) | Department of Pure Mathematics University of Waterloo, Canada ✉ nspronk@uwaterloo.ca , ☎ +1 (519) 888-4567 ext. 35559 |
| Dr. Ross Stokke (Professor) | Department of Mathematics and Statistics University of Winnipeg, Canada ✉ r.stokke@uwinnipeg.ca , ☎ +1 (204) 786-9375 |
| Dr. Varadharajan Muruganandam (Professor) | Department of Mathematics IIT Palakkad, Palakkad, Kerala, India - 678557 ✉ vmuruganandam@iitpkd.ac.in |
| Dr. Matthew Wiersma (Assistant Professor) | Department of Mathematics and Statistics University of Winnipeg, Canada ✉ m.wiersma@uwinnipeg.ca , ☎ +1 (204) 786-9367 |
| Dr. Alexandru Nica (Professor) (for Teaching) | Department of Pure Mathematics University of Waterloo, Canada ✉ anica@uwaterloo.ca , ☎ +1 (519) 888-4567 ext. 45570 |
| Dr. Matthew Kennedy (Professor) | Department of Pure Mathematics University of Waterloo, Canada ✉ matt.kennedy@uwaterloo.ca , ☎ +1 (519) 888-4567 ext. 41346 |