Jungbae Nam

April 24, 2025

Personal Data

Permanent Address: 380 Ave Hearne 302, Pointe-Claire, Quebéc, Canada H9R 1K3
Phone: (514) 999-5476
Email: jungbae.nam@gmail.com
Website: https://jbnam.github.io/

Professional Interests

Mathematical modeling/algorithm (Specialized in Number Theory); High-Performance Computing (CUDA); Blockchain Technology/Homomorphic Encryption; Automated Theorem Prover; Data Science (ML/DL);

Skills and Abilities

Languages: English (Expert), Korean (Native), French (Beginner)
Programming Languages/Libraries: Python, C/C++, CUDA, SageMath, PARI/GP, GMP, FLINT
Other Tools/Frameworks: Linux, Git, VS Code, TensorFlow, Keras, Scikit-learn, Pandas, NumPy

Education

Ph.D. Mathematics & Statistics, Concordia University, Canada — Sept. 2014 - May 2019
Supervisors: Prof. Hershy Kisilevsky, Prof. Chantal David

M.Sc. Mathematics & Statistics, Concordia University, Canada — Jan. 2010 - May 2012
Supervisor: Prof. Hershy Kisilevsky

B.A. Mathematics & Statistics, Concordia University, Canada — Sept. 2004 - May 2009
With Great Distinction (CGPA: 4.16/4.3),
Honours Project Supervisor: Prof. Hershy Kisilevsky

Graduate Diploma in Computer Science, Concordia University, Canada — Sept. 2002 - May 2004

Research and Other Professional Experiences

Independent Mathematics Researcher, CICMA, Montréal, Quebéc, Canada — Jun. 2020 - Present

Project #1: Research and development on an ML/AI application (NLP) with Automated Theorem Prover (In progress).

Project #2: Titanic Kaggle Competition - ML from Disaster: Prediction of survival on the Titanic; Written in Python with NumPy and Pandas, Sklearn, and XGBoost; Scored top 5 percentile (https://github.com/jbnam/Titanic-ML).

Project #3: High-Performance Number Theoretic Computing for a massive amount of the central elliptic L-values of higher order twists by using Python, C/C++, GMP, FLINT, PARI/GP, and CUDA with Valgrind and GDB for debugging and Nsight Tools for profiling. Created the database on the web for public access (https://github.com/jbnam/twists/). Those central values were computed with my own CUDA package, twists_clve, in an NVIDIA GPU at a thousand times faster rate than in a conventional CPU.

Project #4: Using the L-values computed in the previous project, investigated their statistics analytically and arithmetically (Collaborator: Prof. Hershy Kisilevsky).

Project #5: Computed non-negative integers representable as sum of two squares and singular series with Euler products to explain some bias for consecutive pairs of them in the arithmetic progression using SageMath, Pari/Gp, and Mathematica (Collaborators: Prof. Chantal David, Prof. Lucile Devin, Jeremy Schlitt).

Contractor, The Government of Canada, Ottawa, Ontario, Canada May. 2022 - Jun. 2022

Non-Disclosure Agreement

Research Assistant Professor, Concordia University Sept. 2019 - May 2020

Project: Computed and conjectured the moments of central elliptic L-values for cubic twists, the central values of some family of analytic functions, using Python, SageMath, and Pari/GP on a CentOS cluster in Centre de Recherches Mathématiques (Collaborators: Prof. Chantal David, Prof. Matilde Lalín).

Mentoring: Computational number theory project for an undergraduate and master student using Python, SageMath, and Pari/GP.

Mentors: Prof. Hershy Kisilevsky, Prof. Chantal David

Ph.D. Research Assistant, Mathematics & Statistics, Concordia University Sept. 2014 - May 2019

Projects: Computed the critical L-values of primitive forms of even weight twisted by odd prime characters and proved nonvanishing theorems for them using the random matrix theory and analytic/algebraic techniques (Supervisors: Prof. Hershy Kisilevsky, Prof. Chantal David).

Localization Quality Assurance Tester, Babel Media, Montréal, Quebéc Mar. 2012 - June 2014

b Conducted linguistic testing, reviewed translation qualities and provided accurate solutions with considering the required compliance, culturalization, internationalization, etc. in computer games and software under intensive time pressure using some databases such as TTP, JIRA and SpiraTest for the issue reports and their regressions.

Master Research Assistant, Mathematics & Statistics, Concordia University Jan. 2010 - May 2012

Project: Derived the ratio conjecture for the ratios of central L-values of a family of twists of elliptic curves and supported the conjecture with numerical data (Supervisor: Prof. Hershy Kisilevsky).

Publications

Long Phan, Alice Gatti et al. Apr. 2025
Title: *Humanity's Last Exam*

H. Kisilevsky, J. Nam Jan. 2025
Title: *Non-Zero Central Values of Dirichlet Twists of Elliptic L-Functions*

C. David, L. Devin, J. Nam, J. schlitt Nov. 2021
Title: *Lemke Oliver and Soundararajan bias for consecutive sums of two squares*

C. David, M. Lalín, J. Nam Jul. 2021
Title: *Conjecture for Moments Associated with Cubic Twists of Elliptic Curves*

Ph.D. Thesis Mathematics & Statistics, Concordia University 2019
Title: *Critical L-values of Primitive Forms Twisted by Dirichlet Characters*

M.Sc. Thesis Mathematics & Statistics, Concordia University 2012
Title: *Heuristic Results for Ratio Conjectures of* $L_E(1,\chi)$

Teaching Experiences

Assistant in a Senior/Master Project, Mathematics & Statistics, Concordia University 2019
Responsibilities: Advise them to compute huge arithmetical data for elliptic curves and their statistics using Sage and Pari/GP

Course Instructor, Mathematics & Statistics, Concordia University 2014 - May 2020
Courses: Algebra & Functions: College Algebra; Differential & Integral Calculus I

Teaching Assistant, Mathematics & Statistics, Concordia University 2010 - 2012, 2014 - 2018
Courses: Linear Algebra I & II; Differential Equations; Elementary Number Theory;Operation Research I; Real Analysis I; Linear Algebra and Applications I;Techniques in Symbolic Computation

Tutor in Math Help Centre Mathematics & Statistics, Concordia University 2010 - 2019

Honors and Awards

Research Assistantship CICMA, Concordia University (CAD 5,000/year) 2010 - 2012, 2014 - 2018

Teaching Assistantship Concordia University (CAD 10,000/year) 2010 - 2012, 2014 - 2018

ISM Graduate Scholarships Institut des Sciences Mathématiques (CAD 1,000) 2010

Dean's List Concordia University 2005 - 2007

New Millennium Scholarship Concordia University (CAD 1,000) 2005

Seminars/Conferences

Moments of L-functions Workshop, Pacific Institute for the Mathematical Sciences July 2022

Séminaire Québec-Vermont Number Theory 2012 - Present

Montréal Inter-University Seminar on Analytic Number Theory (MOBIUS ANT) 2012 - Present

Number Theory Web Seminar (ntwebseminar.org) 2020 - Present

Maine-Québec Number Theory Conference 2012 - 2021

The Canadian Number Theory Association meeting (CNTA XV) Jul. 2018

Workshop at Harvard: "Distribution of Modular Symbols and L-values" May 2017

Workshop at Fields Institute: "Serre's Uniform Boundedness Conjecture" Apr. 2016

References Upon Request