

MIURAN DENCIL J.A.D

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EDUCATION

Texas Tech University <i>Ph.D. in Mathematics</i> <i>Dissertation: Geometric properties of Special Functions and related quadratic differentials</i>	<i>Lubbock, TX</i> <i>Aug. 2015 - Aug. 2020</i>
Texas Tech University <i>MSc in Mathematics</i>	<i>Lubbock, TX</i> <i>Dec. 2016</i>
University of Kelaniya <i>BSc Special Degree in Mathematics, First Class Honors</i>	<i>Kelaniya, Sri Lanka</i> <i>Dec. 2011</i>

RESEARCH INTERESTS

My main research interests are in real and complex analysis. More specifically, I am interested in special functions such as Weierstrass \wp and hypergeometric function and their applications. Univalent functions, orthogonal polynomials and typically real functions are further areas of interest. My other research interests are in analytical number theory, geometric properties of mappings, quadratic differentials, symmetrization techniques, elliptic functions, topology, algebraic geometry, ODE/PDE theory, harmonic functions, theory of extremal metrics, riemannian geometry, and complex manifold theory.

TEACHING EXPERIENCE

University of Moratuwa, Department of Mathematics <i>Lecturer</i>	<i>Feb. 2021 - Present</i> <i>Moratuwa, Sri Lanka</i>
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- Delivered lessons for students, helped students by providing examples and enabling them to improve their grades, mentored 10 first year students planned Lectures, assessed students' work, encouraged personal development via tutorial or advisement and invigilated examinations, wrote research proposals, papers and other publications, managed research budget, presented at conferences and seminars, attended staff meetings and general administration meetings

Classes Taught: MA 1014-Mathematics, MA3023- Numerical Methods.

Texas Tech University, Department of Mathematics and Statistics <i>Graduate Part-Time Instructor</i>	<i>Aug. 2019 - Aug. 2020</i> <i>Lubbock, TX</i>
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- Delivered lessons for Calculus II Students
- Helped students by providing examples and enabling them to improve their grades

Texas Tech University, Department of Mathematics and Statistics <i>Student Assistant</i>	<i>Jan 2016 - May 2016</i> <i>Lubbock, TX</i>
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- Assisted students with understanding Cal I, II, III
- Helped students by providing examples and enabling them to improve their grades

University of Moratuwa, Department of Mathematics <i>Lecturer (Probationary)</i>	<i>Mar 2013 - Aug 2015</i> <i>Moratuwa, Sri Lanka</i>
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- Mentored 13 first year students each year, planned Lectures, assessed students' work, encouraged personal development via tutorial or advisement and invigilated examinations, wrote research proposals, papers and other publications, managed research budget, presented at conferences and seminars, attended staff meetings and general administration meetings.

Classes Taught: *Linear Algebra, Complex Analysis, Vector Analysis, Abstract Mathematics*

Open University of Sri Lanka, Faculty of Engineering

Nov 2013 - Aug 2015

Visiting Lecturer

Nugegoda, Sri Lanka

- Lecture planning, preparation, research, contacted and taught students
- Checked and assessed student's work
- Encouraged personal development via tutorial or pastoral work and invigilated examinations.

Classes Taught: *Engineering Mathematics, Combined Mathematics*

University of Kelaniya, Department of Mathematics

Dec 2011 - Mar 2013

Temporary Tutor

Kelaniya, Sri Lanka

- Planned tutorial class, preparation, research, contacted and taught students
- Checked and assessed students' work
- Encouraged personal development via tutorial or pastoral work and invigilated examinations

Conducted Tutorial classes: *Geometry, Vector Analysis, Fluid Dynamics*

Staff Development Program, University of Kelaniya

Jul 2013 - Sep 2013

University Lecturer Trainee

Kelaniya, Sri Lanka

Trained in: Orientation as a University Teacher, Personal Development and Counseling, Teaching and Learning Methods, Assessment and Evaluation, ICT skills in Higher Education, Research in Higher Education, University Administrative Procedures, Strategic Planning and Management for Universities

Private Tutoring

Conducted private tutoring classes for Ed-Excel and local high school mathematics students for more than 10 years: Trigonometry, Differentiation, Integration, Complex Numbers, Mechanics, Harmonic Motions, Relative Motions, Permutations and Combinations Circular Motions, Geometry of Straight Line and Circles, Conic Sections, Probability and Statistics

RESEARCH EXPERIENCE

Texas Tech University, Department of Mathematics and Statistics

August 2018 - Present

Research Assistant

Lubbock, TX

- Study geometric properties of special functions and extremal matrices (dissertation), 2015 - Present
Focus on topological structure of periodic cell in the image plane of Weierstrass \wp -function. Also study Weierstrass differential equation, and related Quadratic differentials, and relationships between Green function on the torus and Weierstrass function.
- Study geometric properties of hypergeometric function, 2015 - Present
Study the geometric properties of modulus of the hypergeometric polynomial, properties of orthogonal polynomials, and typically real functions in circularly symmetric image domain of hypergeometric polynomial.

- Researched seasonal influenza model with vaccine and loss of immunity, Spring 2018

Introduced SIR model to model seasonal influenza including both vaccine and recurrence. Analysed data using backward, forward, and hopf bifurcation methods.

PROFESSIONAL TRAINING

IBM Data Science

July 2019

Coursera online

- Open Source tools for Data Science: Learned about Jupiter Notebooks, RStudio IDE, Apache Zeppelin and Data Science Experience
- Data Analysis with Python: Imported Datasets, Cleaned the Data, manipulated Data frame, Summarized the Data, Built machine learning Regression models, Built data pipelines
- Data Visualization with Python: Learned how to read csv files into a pandas dataframe and process and manipulate the data in the dataframe, and how to generate line plots using Matplotlib
- Data Science Methodology: Learned about the major steps involved in tackling a data science problem, the major steps involved in practicing data science, from forming a concrete business or research problem, to collecting and analyzing data, to building a model, and understanding the feedback after model deployment, also learned how data scientists think
- Applied Data Science Capstone: Learned how to be creative in situations where data are not readily available by scraping web data and parsing HTML code, utilized Python and its pandas library to manipulate data, refined skills for exploring and analyzing data, completed a capstone project demonstrated what data scientists go through in real life when working with data

Active Citizens Social Leadership Training Program

Feb. 2015

British Council, UK

Thulhiriya, Sri Lanka

Developed my sense of self-awareness and my community's position in the world. Improved my dialogue skills and increased appreciation for difference. Learned how my local actions can have global resonance. Developed the skills and knowledge to plan and implement social action projects including recycling projects. Networked with like-minded people across the globe.

Staff Development Program, University of Kelaniya

July 2013 - Sept. 2013

University Lecturer Trainee

Kelaniya, Sri Lanka

Trained in: Orientation as a University Teacher, Personal Development and Counseling, Teaching and Learning Methods, Assessment and Evaluation, ICT skills in Higher Education, Research in Higher Education, University Administrative Procedures, Strategic Planning and Management for Universities

UNIVERSITY SERVICE

Academic Co-ordinator- Semester I (Intake 20)

Faculty of Engineering

Moratuwa, Sri Lanka

August 2021- Present

Personal Mento (Intake 20)

Faculty of Engineering

Moratuwa, Sri Lanka

August 2021- Present

Course Coordinator, M.Sc./PG. Diploma in Financial Mathematics

Faculty of Engineering

Moratuwa, Sri Lanka

June 2021- Present

Group Coordinator, University of Moratuwa

Faculty of Engineering

Moratuwa, Sri Lanka

2013 and 2014

- Coordinated with the pre-academic term committee and with all other module coordinators to ensure that academic activities are conducted smoothly
- Helped and facilitated orientating new students to the university environment and acted as the new students' advocate for both academic and social matters
- Referred matters that are deemed to be beyond my authority to relevant and appropriate authorities
- Ensured that all students participated in the program actively

Member, Orientation Committee, University of Moratuwa
Faculty of Engineering

Moratuwa, Sri Lanka
2013 and 2014

News Officer, Department of Mathematics
University of Moratuwa

Moratuwa, Sri Lanka
2013 - 2015

Active Citizen Leadership Board
University of Moratuwa

Moratuwa, Sri Lanka
2015

PRESENTATIONS AND CONFERENCES

Presentations

Invited Talk, "Weierstrass \wp - function and related quadratic differentials," *20th International Mathematics Conference 2017* (IMC 2017) in Dhaka, Bangladesh, Dec. 2017.

Invited Talk, "Geometric properties of Weierstrass \wp function," *4th Annual Northeastern Analysis Meeting*, Syracuse, NY, 2019

Poster Presentation, "Geometric properties of Weierstrass \wp Function and Related Quadratic Differentials ," *Second Sectional Meeting of the SIAM TX/LA Section*, Dallas, TX, 2019

Conferences

- **Attendee**, *ICM Satellite Meeting*, Miami, FL, July 26-29, 2018
- **Attendee**, *20th International Mathematics Conference* (IMC 2017), Dhaka, Bangladesh, Dec. 2017
- **Attendee**, *Workshop on Asymptotic Analysis at IUPUI* ,Fort Wayne, IN, Oct. 6-8, 2017
- **Attendee**, *Sectional Meeting at State University of New York at Buffalo*, Buffalo, NY, Sept. 16-17, 2017
- **Attendee**, *KMITL International Conference on Mathematics*, Bangkok, Thailand, Dec. 22-25, 2016
- **Attendee**, *Topology and Geometric Seminar*, Texas A&M, College Station, TX, Nov. 2016

PROFESSIONAL MEMBERSHIPS

- **Treasurer**, *Society for Industrial and Applied Mathematics*, Texas Tech University Chapter, Aug. 2018 - July 2019
- **Member**, *Society for Industrial and Applied Mathematics*, 2015 - Present
- **Member**, *American Mathematical Society*, 2015 - Present
- **Member**, *United States-Sri Lanka Fulbright Commission*, 2014 - Present

AWARDS AND HONORS

- **Presidential Graduate Fellowship**, *Texas Tech University, Graduate School*, 2015 - 2020, **\$32,000/year** and **\$2,000/year** for research and travel
- **Post-Graduate Research Grant**, *University Grant Commission*, Sri Lanka, 2015 - 2018, **\$5,000/year**
- **Travel Award**, *SIAM TX/LA* Second Sectional Meeting of the SIAM TX/LA Section , Dallas, TX, 2019
- **Travel Award**, *Syracuse University* The 4th Annual Northeastern Analysis Meeting , Syracuse, NY, 2019
- **Travel Award**, *NSF*, ICM Satellite Meeting, Miami, FL, 2018
- **Travel Award**, *AMS*, Sectional Meeting at State University of NY at Buffalo, NY, 2017
- **Travel Award**, *NSF*, Workshop on Asymptotic Analysis at Indiana University, Bloomington, IN, 2017
- **Travel Award**, *Texas A&M University*, Topology and Geometric Seminar, College Station, TX, 2016

SKILLS

Computer Languages	Wolfram Mathematica, Matlab, Maple, Python, RStudio, C/C++
Software & Tools	MS Office, learning management software (Moodle and BlackBoard), Latex
Languages	English, Sinhala, Tamil

REFERENCES

- Alexander Yu. Solynin, Ph.D.
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