JITHIN D. GEORGE

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EDUCATION

Current **Ph.D., Engineering Sciences and Applied Mathematics**, *Northwestern University*.
G.P.A: 3.693/4.00 Adviser: Niall Mangan

2016-2018 **M.S., Applied Mathematics**, *University of Washington*.
Thesis: Green's Law and the Riemann Problem in Layered Media Adviser: Randall J. LeVeque.
G.P.A : 3.74/4.00

2011-2015 **B.E.(Hons.), Mechanical Engineering**, *BITS-Pilani*.
G.P.A: 8.11/10.00 (Major G.P.A: 8.36/10.00)

RESEARCH POSITIONS

2019 -2020 **Visiting Student**, *Argonne National Laboratory*.
- Worked with Dr. Emil constantinescu on the development of inverse methods coupled with domain decomposition for shallow water equations

June - Dec 2019 **Givens Associate**, *Argonne National Laboratory*.
- Worked with Dr. Wendy Di on the multilevel Lennard-Jones problem which explored the creation of a multigrid inspired method for accelerating the iterative optimization process for the Lennard-Jones problem

Summer 2017 **Visiting Scholar**, *International Centre for Theoretical Sciences - TIFR*.
- Worked with Dr. Vishal Vasan on a spectral methods toolbox for solving partial differential equations and boundary value problems using their integral forms on various domains, like on the real line using rational Chebyshev functions.

2015- 2016 **NPOL Project Assistant**, *Tata Institute of Fundamental Research- Centre for Applicable Mathematics*.
- Worked on 3-D tomographic algorithms for synthetic aperture sonar under Dr. Venky Krishnan and Dr. A.S. Vasudeva Murthy for the Naval Physical and Oceanic Laboratory (NPOL).
- Worked with Dr. Praveen Chandrashekar on well-balanced schemes for Euler equations with gravity (describing various gas dynamics).

WORK EXPERIENCE

2021- 2022 **Graduate Assistant**, *Buffet Institute, Northwestern University*.
Graduate assistant involved in organizing and facilitating Idea Dialogues and Idea Incubation workshops aiming to foster inter-disciplinary collaboration between faculty at Northwestern with the intention of solving global problems.

2019- 2020 **Graduate Teaching Assistant**, *Northwestern University*.
Worked as a Teaching Assistant for
- MATH 228 - Multivariate Calculus
- MATH 252 - Honors Calculus

2016-2018 **Graduate Teaching Assistant**, *University of Washington*.
Worked as a Teaching Assistant for
- AMATH 351 - Differential Equations
- PHY 121 - Mechanics Laboratory
- AMATH 301 - Beginning Scientific Computing
- STAT 311 - Essentials of Statistical Methods

June - Dec 2014 **Noise, Vibration and Harshness Team**, *Altair Engineering*.
- Created Build Verification Tests for Altair's Noise Vibration and Harshness Director.
- Created post-processing utilities for Altair's HyperView.

Summer 2013 **Summer Intern**, *Madras Atomic Power Station*

- Worked on the analysis of piston ring failure in compressors using 10 years of data and setup a framework for early warning systems for preventive maintenance.

PUBLICATIONS AND PROCEEDINGS

1. Jithin D. George, and Zichao Wendy Di. "Trilateration-Based Multilevel Method for Minimizing the Lennard-Jones Potential." In **International Conference on Computational Science**, pp. 163-175. Springer, Cham, 2020.
https://doi.org/10.1007/978-3-030-50426-7_13

2. Jithin D. George, David I. Ketcheson, and Randall J. LeVeque. "Shoaling on steep continental slopes: Relating transmission and reflection coefficients to Green's law." **Pure and Applied Geophysics** 177.3 (2020): 1659-1674.
https://doi.org/10.1007/s00024-019-02316-y

3. Jithin D. George, David I. Ketcheson, and Randall J. LeVeque. "A Path-Integral Method for Solution of the Wave Equation with Continuously Varying Coefficients." **SIAM Journal on Applied Mathematics** 79.6 (2019): 2615-2638.
https://doi.org/10.1137/19M1238630

4. "A Visual Way to Teach the Fast Fourier Transform", Jithin D. George. **SIAM News** (Nov. 2018)
(*Third most popular SIAM News article in 2018*)
https://sinews.siam.org/Details-Page/a-visual-way-to-teach-the-fast-fourier-transform

5. Jagtap, Ameya D., Esha Saha, Jithin D. George, and AS Vasudeva Murthy. "Revisiting the inhomogeneously driven sine–Gordon equation." **Wave Motion** 73 (2017): 76-85.
https://doi.org/10.1016/j.wavemoti.2017.05.003

6. Biswal, Sailendu, Jithin Donny George, and G. R. Sabareesh. "Fault size estimation using vibration signatures in a wind turbine test-rig." **Procedia Engineering** 144 (2016): 305-311.
https://doi.org/10.1016/j.proeng.2016.05.137.

7. Saxena, Ashish, and Jithin Donny George. "Numerical study on displacement of dielectric film composed of array of differently shaped elements for capacitance based MEMS sensors." **2016 International Conference on Microelectronics, Computing and Communications (MicroCom)**. IEEE, 2016.
https://doi.org/10.1109/MicroCom.2016.7522489.

ARTICLES SUBMITTED AND UNDER PREPARATION

1. "Walking into the complex plane to 'order' better time integrators" Jithin D. George, Samuel Y. Jung, Niall M. Mangan .
https://arxiv.org/abs/2110.04402

2. "Model-driven design and optimization of CRISPR-based point-of-use pathogen diagnostics " Jaeyoung K. Jung, Joseph J. Muldoon, Maria D. Cabezas, Anne D'Aquino, Matthew S. Verosloff, Katelyn E. Dray, Jithin George, Sasha Shirman, Grant A. Rybnicky, Kosuke Seki, Khalid K. Alam, Niall M. Mangan, Joshua N. Leonard, Michael C. Jewett, Julius B. Lucks

3. "How does a coin toss? A look under an asymptotic microscope" Jithin D. George.
https://arxiv.org/abs/1904.07101

AWARDS

- Joseph Hammack Endowment Award from the Department of Applied Mathematics at the University of Washington.
- Indian High Commissioner's Gold Medal from the Indian Ambassador to Tanzania.
- Merit-Cum-Need Scholarship throughout undergraduate study at BITS-Pilani.
- Silver medal in general knowledge in the NCERT National Talent Search Examination
- Silver medal in mathematics in the NCERT National Talent Search Examination.

OTHER RELEVANT PROJECTS

- **Estimating speech from lip dynamics** (with Ronan Keane and Conor Zellmer) *UW (AMATH 582), Winter 2017*.

- **Gene expression exploration through fMRI data analysis** (with Dr. Nina De Lacy) *Seattle Children's Hospital, 2016*.

- **Condition monitoring of a wind turbine test rig and fault prediction**(with S. Biswal and G. Sabareesh) *BITS-Pilani, 2015*.
- **Design of a novel wall-climbing robot** *BITS-Pilani, 2013*.
- **Development of an image processing prototype called "Lazy Mouse"** *MIT Media Lab Design Innovation Workshop, 2014*.
- **Modeling and simulation of a prosthetic socket** (with Dr. S.P Regalla) *BITS-Pilani, 2014*.

SERVICE TO VARIOUS COMMUNITIES

- **Scio Foundation** (2012 – 2015). Served as Editor-In-Chief, writing articles and organizing events to expose indian high schoolers to various careers and the paths to reach them.
- **SIAM Chapter at UW** (2016-2018). Volunteer for events like Math Fair where we travel to a local school and engage the students in math and critical-thinking activities.
- **SIAM Chapter at Northwestern** (2018-) (https://siam-northwestern.github.io/) Involved in the Northwestern Chapter since 2018. Served as the vice-president of the Northwestern chapter from 2020-2021. Currently serving as the president of the Northwestern Chapter. We organize the Chicago Area Siam Student Conference every year with IIT and UIC. We also have the SIAM Applied Math Journal Club at Northwestern which I started in 2019 for students to learn about new topics, methods and brainstorm about their research. Other activities include Coffee/Cider with undergrads, fun math competitions and Bridging the Gap seminars.

INTERESTS

- Scientific Computing, Perturbation Theory, Dimensionality Reduction, Dynamical Systems, Calculus of Variations and Random Processes.

Skills

Programming
Python • Matlab • Fortran • C • R • TCL • LaTeX•

Software
HyperWorks• COMSOL • Creo • SPSS • CATIA •