NIRJAL SHRESTHA
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Personal Statement:

Passionate and innovative research mathematician with a background in machine learning, computer science, and numerical analysis. Seeking a position in data science/machine learning/numerical analysis at the interface of a collaborative scientific/technical group and an executive/management team.

Education:

- **Bachelor of Science in Computer Science**
- **Bachelor of Arts in Mathematics**
- **Associate of Arts and Science in Information Technology**
  Cameron University, Lawton, Oklahoma, GPA – 3.98, Aug 2014 - May 2018

- **Doctor of Philosophy in Mathematics**
  University of Florida, Gainesville, Florida, GPA – 3.86, Aug 2018 - Aug 2023 (Expected)

Skills:

- **Programing:** C++, PHP, CSS, HTML, Swift, SQL, Javascript, Python, R, MATLAB, Mathematica, LaTeX.
- **Databases**: MySQL, SQL Server, MS-Access.
- **Software:** Visual Studio, MS Office, Visual Basic, Wireshark, System Architect.
- **Operating System**: Windows, Linux, MAC OS.

Experience and Certification:

- Robotics Instructor, CETES Department, Cameron University. (Jan 2016 - Mar 2016)
- Research Assistant, Mathematical Science, Cameron University. (Aug 2016 – May 2018)
- Teaching Assistant, Department of Mathematics, University of Florida. (Aug 2018 - Present)
  Courses Taught: MAC 1105, MAC 1140, MAC 1147, MAC 2311, MAC 2312, MAC 2313
- Certification: ICCP Certified Computer Scientist, Testout Security and Network Pro

Relevant Projects:

1. Analyzing the equation of gas dynamics as a hyperbolic system of conservation law using Fenics.
   - Wrote the variational form of the hyperbolic system and analyzed the boundary and compatibility condition.
   - Discussed both the implicit and explicit Euler time discretization schemes.
2. Using Topological Data Analysis (TDA) to interpret the data from harvesting in R.
   - Imported the data from excel to R and converted it to point cloud.
   - Created Simplicial Complex and Persistence Landscape.
   - Computed Principal Component Analysis(PCA) and plotted the Support Vector Machine.
3. Deep Learning as an Optimal Control.
   - Derived the backpropagation algorithm of ANN and CNN using Lagrange Multiplier.
   - Currently reading papers to figure out the relation between the Pontryagin Maximum Principle and architecture of CNN.

4. Extending the Local Convergence Analysis of Newton's Method.
    - Published a paper describing the computation of radii of convergence of the two step Newton method and two step Midpoint method.
    - Found the error bounds on the distances involved using Lipschitz constants.
5. Electronic Medical Record Database Developer.
    - Worked as a lead of a Database team and collaborated with programming and multimedia team to develop a relational database.
    - Developed a Process Library Database like database repository where users can view, upload, and update the file based on user privileges.
6. Middleware Development Lead.
    - Collaborated with in house developers to create a sustainable application for providing better tracking and analytics of project evaluation with backbone C#
    - Coordinated with database team to design optimized queries and procedures for retrieving data from SQL database.

RESEARCH PUBLICATION

1. Ioannis K. Argyros and Nirjal Shrestha, Extending the Local Convergence Analysis of Newton's Method, Communications on Applied Nonlinear Analysis, Vol 24, No. 2 page 49-60
2. Ioannis K.Argyros and Nirjal Shrestha, Comparing the Local Convergence Analysis of Some Newton – Like Methods For Solving Equations, Advances and Applications in Mathematical Sciences (ISSN 0974-6803)

RESEARCH PRESENTATIONS

1. National Conference:

a. Joint Mathematics Meetings(JMM), Atlanta, GA — Jan 4, 2017- Jan 7, 2017
b. Joint Mathematics Meetings(JMM), San Diego, CA — Jan 10, 2018 – Jan 13, 2018
c. National Conference of Undergraduate Research (NCUR), UCO, Edmond OK — April 4, 2018 – April 7, 2018

2. Regional Conference:

a. Texas Oklahoma Regional Undergraduate Symposium (TORUS), Cameron University, Lawton, OK. — Feb 25, 2017
b. Texas Oklahoma Regional Undergraduate Symposium (TORUS), MWSU, Wichita Falls, TX. — Feb 10, 2018
c. Oklahoma Research Day, NWOSU, Enid, OK — Mar 03, 2017
d. Oklahoma Research Day, NWOSU, Enid, OK — Mar 09, 2018

3. Local Conference:

a. Seminar for Undergraduate Mathematics, Cameron University, Lawton, OK. — Nov 16, 2016
b. Seminar for Undergraduate Mathematics, Cameron University, Lawton, OK. — May 02, 2018
c. Cameron Research Summit, Cameron University, Lawton, OK. — Feb 18, 2018

EXTRA CURRICULAR ACTIVITIES

1. President, Society for Industrial and Applied Mathematics (SIAM) — Aug 2021 – Present
2. Vice President, Nepalese Student Association, (NSA UF) — Aug 2021 – Present
3. Communication Lead, Engineers Without Borders (EWB UF Nepal) — Aug 2020 – Present
4. Members at Large, American Mathematical Society (AMS) — Aug 2019 – Present
5. Executive Member, Nepalese Association of Florida (NAF) — Aug 2019 – Aug 2021

6. Webmaster, Society for Industrial and Applied Mathematics (SIAM) Aug 2020 – Aug 2021
7. Graduate Student Council (GSC) Representative, GMA, UF Aug 2019 – Aug 2020
8. President, Cameron University Nepalese Association (CUNA) Mar 2017 – Mar 2018
9. Vice President, Pi Mu Epsilon, Cameron University Mar 2017 - Mar 2018
10. Chief Justice, Supreme Court of SGA, Cameron University Jan 2016 - May 2017

AWARDS AND HONORS

1. Graduate Student Certificate of Excellence, University of Florida, 2020
2. Student Travel Grant, Cameron University 2016, 2017
3. Helen Carney Scholarship, Department of Mathematical Sciences at Cameron University 2017
4. International Student Scholarship, Cameron University 2017
5. Student Organizational Leader for the academic year 2016-2017 at Cameron University 2017
6. Awarded with Top 20 Students at Cameron University for the academic year 2017-2018
7. President's List, Cameron University Fall 2014 - Spring 2018 except Spring 2017
8. Inductee, National Honor Society of Phi Eta Sigma, Pi Mu Epsilon, and Phi Kappa Phi 2016, 2017