Yoseph Tereda

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GitHub: github.com/Yoseph-Tereda/cardiac-electrophysilogy

PROFILE

Mathematics & Simulation Specialist with dual M.Sc. degrees in Mathematics and Computer Science, specializing in numerical linear algebra, finite element modeling, HPC, and computational mechanics. Experienced in designing and solving advanced mathematical problems involving PDEs, sparse solvers, and numerical optimization. Strong communication skills with extensive teaching experience.

CORE COMPETENCIES

- Numerical Linear Algebra (sparse matrices, iterative solvers)
- Finite Element / Finite Difference Methods
- PDE Modeling & Applied Mathematics
- High-Performance Computing (GPU acceleration, parallelization)
- Scientific Computing & Numerical Optimization
- Computational Mechanics & Physics-Based Modelling
- MATLAB, Python, C++
- Technical Writing & Problem Development

TECHNICAL SKILLS

Programming: Python, MATLAB, C++, R, SQL, TensorFlow, PyTorch

Mathematical Tools: FEM/FDM, PDE solvers, sparse matrix methods

Data & ML: scikit-learn, statistical modeling, time-series forecasting

Visualization: Matplotlib, Seaborn, Tableau

Databases: MySQL, PostgreSQL

PROFESSIONAL EXPERIENCE

Simulation Engineer / Graduate Researcher – Cardiac Electrophysiology Simulation

University of Saskatchewan | 2019 – 2021

• Developed finite element and finite difference PDE models for cardiac simulations.

• Implemented GPU-accelerated solvers reducing runtime by 60%.

• Designed numerical experiments and rigorous mathematical validation problems.

• Applied advanced numerical linear algebra: iterative solvers, preconditioning.

• Validated models with experimental datasets and published reproducible code.

Data Science & Simulation Intern – Hydrological Modeling

Global Institute for Water Security | 2018 – 2021

• Built LSTM/Bi-LSTM hydrology prediction models improving accuracy by 15%.

• Developed an explicitly invertible CDF approximation (published work).

• Performed numerical simulations and model evaluations in Python.

Teaching Assistant / Sessional Lecturer – Applied & Computational Mathematics

UofS, KFUPM, Arba Minch University | 2007 – 2018

• Taught Numerical Analysis, PDEs, Applied Mathematics, and Modeling.

• Created and reviewed advanced mathematical problem sets.

• Supervised research projects in simulation and numerical optimization.

Database Developer

Arba Minch University | 2006 – 2013

• Designed relational databases and optimized SQL queries.

EDUCATION

M.Sc., Computer Science – University of Saskatchewan (2019–2021)

M.Sc., Mathematics – KFUPM (2014–2016)

B.Sc., Mathematics – Hawassa University (2002–2006)

PROJECTS

• Cardiac Electrophysiology Simulation (GitHub)

• Fractional Diffusion Solver

• Hydrological Deep Learning Forecasting

• CFD Particle Diffusion Modeling

PUBLICATIONS

• Lipoth, J., Tereda, Y., et al. (2022). A new explicitly invertible approximation for standard normal CDF.

• Malik, N., Tereda, Y., et al. (2016). Particle pair diffusion of inertial particles.

HONORS

• Graduate Teaching Assistance Scholarship – UofS

• Full-Time Student Scholarship – KFUPM