Mohammed Sayyari

PhD Student

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About me

Mohammed is a Mathematician with a solid background in scientific programming. Mohammed's mathematical interests are in the analysis of partial differential equations and the discretization thereof. Mohammed thrives in environments that empower him to make decisions about project planning and execution. Mohammed is also a great asset in most team combinations.

Skills

Mesh Generation

Statistics

Stability Analysis

Linear Algebra

Mathematical Analysis

Computational Fluid Dynamics

Programming

Editing (Latex)⋆4.5 Version Control (Git)⋆5.5 Project Planning⋆4 Team Work⋆3

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Interests

The entropy analysis of fluid flow models and entropy stable discretizations for fluid flow models using discontinuous collocations methods.

Publications

2021 (In Progress) Convergence and robustness of entropy–stable no–slip wall boundary conditions for the Eulerian model for viscous and heat conducting compressible flows.

2021 (In Progress) Hyperparameter estimation for an eulerian model of fluid flow using physics-informed neural networks.

2021 (Submitted) Fully discrete Lyapunov stable discretizations of any order for parabolic reaction-diffusion equations: Application to compartmental models in epidemiology.

2021 (Conference) Entropy–stable no–slip wall boundary conditions for the Eulerian model for viscous and heat conducting compressible flows.

2020 (Co-Author) A surprisingly effective algorithm for the simplification of integrals and sums arising in the partial differential equations and in numerical methods.

2019 (2nd Author) Relaxation Runge-Kutta methods: fully-discrete explicit entropy-stable schemes for the compressible Euler and Navier-Stokes equations.

Education

since-2018 Ph.D. Applied Mathematics — Thuwal, MK, Saudi Arabia
Analysis of an Eulerian Model of Fluid Flow.

2016-2018 M.Sc. Applied Mathematics — Thuwal, MK, Saudi Arabia
Thesis: *Entropy Stable Finite Difference Discretizations for the Compressible Navier-Stokes Equations.*

2014-2016 B.Sc. Computer Science — Manhattan, KS, United States
Minor in Mathematics.

Experience

2018-2020 Graduate classes in applied mathematics. Graduate Teaching Assistant
Assisted for Numerical Linear Algebra, twice, Numerical Optimization and Numerical Analysis of Partial Differential Equations, twice. The roles consisted of holding office hours and tutorials aimed at helping students understand and apply the concepts of their respective class, and creating and grading homework.

2017-2019 Harbor Student Residence. Graduate Resident Assistant
Started in the Fall of 2017. In the beginning, the role consisted of assisting residents with domestic concerns and conflicts, inspecting the general state of the buildings and their vicinity, and hold events aimed at creating a sense of neighborhood. Later, the role became more managerial and consisted of supervising, organizing and assigning tasks, and assisting a team of resident assistants.

2015-2016 Tutor of Physics, Discrete Mathematics and Calculus. Tutor
The role consisted of holding office hours and tutoring sessions.

Other information

Languages

Mohammed is bilingual, he is native in Arabic and proficient in English.

Hobbies

Mohammed studied and instructed basic Music Theory, he plays Oud (an Arabic Instrument) and violin. Mohammed is also a runner, he regularly participates in many public running events such as the color run. Mohammed likes traveling for experiencing nature, camping, hiking, snorkeling and photography.

Activities

since-2017 The Art Perspective student group. President since 2018.