Mokbel Karam
Graduate Research Assistant
Department of Chemical Engineering
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Research Interests

Low-Mach-number flows, Pressure Projection Methods, Modified Equations, Machine Learning, Computational Fluid Dynamics, Simulation Science .

Education

2017–   Ph.D. Candidate / University of Utah, Salt Lake City Utah

- Current GPA: 3.933

2013–17   Bachelor in Mechanical Engineering / Notre Dame University, Zouk Mosbeh, Lebanon

- Graduated with a GPA of 3.89, Highest distinction.
- Dean's List for all semesters
- Scholarship: 75% Scholarship, all semesters

Skills

Communication Skills:

- Leadership skills
  - President of the American Society of Mechanical Engineers student section at NDU-North Lebanon Campus in 2013-2014.
- Languages
  - English (Good)
  - French (Fair)
  - Arabic (Native Language)

Computer Skills:

Python, Sympy (symbolic library Python), Sci-kit Learn, Tensorflow, C++, object oriented programming, Matlab, Web app development using Dash Python, Latex.

Publications

2019   **Mokbel Karam,** Tony Saad, and James C. Sutherland, "A Short Note on Deriving Modified Equations", Journal of Computational Physics, under review.

2019   **Mokbel Karam,** Tony Saad, and James C. Sutherland, "A Framework for Analyzing the Temporal Accuracy of Pressure Projection Methods", 2019 AIAA Computational Fluid Dynamics Conference, AIAA Aviation Forum, under review.

2019   **Mokbel Karam,** Tony Saad, and James C. Sutherland, " A Simple Mechanistic Scheme for Modified Equation Analysis", 2019 AIAA Computational Fluid Dynamics Conference, AIAA Aviation Forum, under review.

2018   Tony Saad, **Mokbel Karam**, and James C. Sutherland, "An Explicit Variable-Density Projection Method for Low-Mach Reacting Flows on Structured Uniform Grids", 2018 Fluid Dynamics Conference, AIAA AVIATION Forum, (AIAA 2018-4266).

Presentations

2019   **Mokbel Karam,** Tony Saad, and James C. Sutherland, "Efficient Multistage Time Integrators for Incompressible Flows Using Projection Methods", SIAM Conference on Computational Science and Engineering, accepted.

2019   **Mokbel Karam**, Fady Najjar, Ming Jiang, James Sutherland, and Tony Saad. "Exploring the Predictability of Random Forests & Deep Neural Networks for the Sedov-Von Neumann-Taylor Blast Wave Solution", SIAM Conference on Computational Science and Engineering, accepted.

2018   Tony Saad, **Mokbel Karam**, and James C. Sutherland, "An Explicit Variable-Density Projection Method for Low-Mach Reacting Flows on Structured Uniform Grids", 2018 Fluid Dynamics Conference, AIAA AVIATION Forum, (AIAA 2018-4266)

2018   **Mokbel Karam**, Fady Najjar, Ming Jiang, James Sutherland, and Tony Saad. "Applying Machine Learning to the Sedov-von Neumann-Taylor Blast Wave", 2018 Rocky Mountain Fluid Mechanics (RMFM) Research Symposium, CU Boulder.

2018   **Mokbel Karam**, Fady Najjar, Ming Jiang, James Sutherland, and Tony Saad. "Applying Machine Learning to the Sedov-von Neumann-Taylor Blast Wave", Seminar, Lawrence Livermore National Laboratory.

Experience

2018   PSAAP II student internship: Spent 10 weeks at Lawrence Livermore National Laboratory with a focus on Machine Learning, Livermore CA , from June 4th to August 10th.

2016   Gained one month of experience in maintenance of kilns at a cement plant, August 2016

2016   Gained one month of experience in maintenance of refrigeration system at a poultry company, July 2016

-     Have been tutoring Math and physics lessons for high school students.

Reference

Prof. Tony Saad

Assistant Professor

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Prof. James C. Sutherland

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