

## EDUCATION

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<b>Virginia Tech</b> Ph.D. in Mathematics ( <i>In progress</i> ), Advisor: Dr. Slimane Adjerdid.	Blacksburg, VA 2019–Current
<b>Virginia Tech</b> M.S. in Mathematics, GPA: 3.96/4.00	Blacksburg, VA 2017–2019
<b>University of Science and Technology Houari Boumediene</b> B.S. in Mathematics. (Class rank 1) – Thesis: “Applications of category theory in science.”	Algiers, Algeria 2013–2016

## PUBLICATIONS

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- [1] S. Adjerdid, T. Lin, and **H. Meghaichi**. “A high order geometry conforming immersed finite element for elliptic interface problems”. In: *Computer Methods in Applied Mechanics and Engineering* 420 (2024).
- [2] S. Adjerdid, T. Lin, and **H. Meghaichi**. “A unified immersed finite element error analysis for one-dimensional interface problems”. In: *BIT Numerical Mathematics* (To appear, 2024).
- [3] S. Adjerdid, T. Lin, and **H. Meghaichi**. “An immersed discontinuous Galerkin method for wave propagation in acoustic elastic media”. In: *Journal of Computational Physics* 472 (2023).

## RESEARCH

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My research centers on the applications of finite element and dG methods to solve partial differential equations with discontinuous coefficients. Some of the topics that I work on are:

- **Fluid-structure interactions:** We have developed a stable and accurate immersed DG method to simulate the travel of acoustic and elastic waves.
- **Unified analysis for immersed Finite element and dG method:** We have developed a unified framework for the analysis of various immersed FE and dG methods for elliptic, hyperbolic, parabolic and higher order PDEs in one spatial dimension.
- **Higher order geometry informed immersed finite element method:** We are developing higher order methods for interface problems on complex interface geometries in two and three spatial dimensions for various PDEs.

## CONFERENCE TALKS

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1. A high order geometry conforming immersed finite element for elliptic interface problems, the 8th Annual Meeting of SIAM Central States Section, University of Lincoln-Nebraska, 2023.
2. A unified immersed finite element error analysis for one-dimensional interface problems, SIAM Southeastern Atlantic Section Annual Meeting, Virginia Tech, 2023.
3. An immersed discontinuous Galerkin method for wave propagation in acoustic elastic media, 16th U.S. National Congress on Computational Mechanics, online, 2021.

4. An immersed discontinuous Galerkin method for wave propagation in acoustic elastic media, Finite Element Circus, online, 2021.
5. An immersed finite element method for wave propagation in acoustic elastic media, Finite Element Circus, Virginia Tech, 2019.

## SCHOLARSHIPS AND AWARDS

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- Outstanding graduate teaching assistant award 2020–2021
- US National Congress for Computational Mechanics Conference Award. 2021
- SIAM Student travel award 2023
- Lee R. Steeneck and Regina Aultice Steeneck Graduate Fellowship 2022–2023

## EXPERIENCE

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### Virginia Tech, Department of Mathematics

Graduate teaching assistant

Blacksburg, VA

Fall 2017-current

- I have worked as a tutor, as teaching assistant, and as an instructor of record.

### Excellence Academy

Mathematics tutor

Algiers, Algeria

2014-2015

- I have worked as a part-time tutor for high school students.

## TEACHING

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- **Instructor of record** at Virginia Tech 2018-current  
*Operational methods: Summer '20, Fall '20, Spring '21, Summer '21, Fall '21, Spring '22, Summer '22, Fall '22, Summer '23,*  
*Numerical analysis: Summer '20.*  
*Linear algebra: Spring '20.*  
*Multivariable calculus: Summer '19.*  
*Integral calculus: Spring '18.*  
*Differential calculus: Fall '18, Fall '19, Summer '21, Summer '22, Summer '23*  
*Elementary calculus II: Summer '18.*
- **Teaching Assistant** at Virginia Tech Summer 2019  
*Operational methods for engineers.*
- **Lab instructor** at Virginia Tech Spring 2018  
*Elementary calculus I.*

## SKILLS

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- **Programming:** Python, MATLAB, Julia
- **Mathematics software:** Mathematica, Sage, Maple, Geogebra.
- **Other:** Linux, L<sup>A</sup>T<sub>E</sub>X, CAD.

## LANGUAGES

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- **English:** Proficient.
- **French:** Proficient.
- **Arabic:** Native.

## EXTRACURRICULAR ACTIVITIES

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| • President, SIAM Student Chapter  | 2018–2020     |
| As the president of the student chapter, I was responsible for organizing biweekly research seminar by VT graduate students, professors and alumni.                  |               |
| • Senior Graduate Teaching Assistant   | 2019-Current  |
| <i>As an SGTA, I am responsible for co-organizing a biweekly seminar on topics ranging from teaching to personal development.</i>                                    |               |
| • Volunteer at MORE '19 and MORE '20   | 2019 and 2020 |
| <i>As a graduate student participant at MORE, I had the chance to share my research experience with aspiring undergraduate students from different universities.</i> |               |