

Hieu-Huu Nguyen

CONTACT INFORMATION

Eindhoven, Netherlands

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RESEARCH INTERESTS

Wave propagation, parallel-in-time method, numerical linear algebra, multiscale method, Gaussian beam methods, scientific computing, machine learning, deep learning.

CURRENT POSITIONS

ASML, Veldhoven, Netherlands

- HPC Applications Engineer, Dec 2022 - current

PAST ACADEMIC POSITIONS

Department of Mathematics and Computer Science, University of Basel, Switzerland

- Postdoctoral Researcher, July 2020 - Nov 2022
- Supervisor: Ivan Dokmanić

EDUCATION BACKGROUND

Oden Institute for Computational Engineering and Sciences, UT Austin

Ph.D. in Computational Science, Engineering and Mathematics, May 2020

- Dissertation Topic: Parallel-in-time methods for high frequency wave propagation in heterogeneous media
- Supervisor: Richard Tsai
- GPA: 3.80

M.S. in CSEM, December 2017

University of Minnesota, Twin Cities

B.S. in Physics, December 2013

- Emphasis on computational Physics
- Minor in Mathematics
- GPA: 3.83

WORK EXPERIENCE **Dell Technology, Austin TX**

- Data Science Graduate Internship, June 2018 - Aug 2018

PUBLICATIONS

T. Vlastic, H. Nguyen, I. Dokmanic, *Implicit Neural Representation for Mesh-Free Inverse Obstacle Scattering*, IEEE Asilomar (2023).

A. Khorashadizadeh, A. Aghababaei, T. Vlastic, H. Nguyen, I. Dokmanic, *Deep Variational Inverse Scattering*, (2023).

H. Nguyen, R. Tsai, *Numerical wave propagation aided by deep learning*, arXiv:2107.13184 (Aug 2021). *Journal of Computational Physics* (2023).

H. Nguyen, R. Tsai, *A stable parareal-like method for the second-order wave equation*, Journal of Computational Physics (2020).

G. Ariel, H. Nguyen, R. Tsai, *θ -parareal schemes*, arXiv:1704.06882 (June 2017).

CONFERENCE
TALKS

Nonlinear travel time tomography with implicit neural Earth model, Math+X 2022 Symposium, Costa Rica (Nov 2022).

Numerical wave propagation aided by deep learning, 11th Parallel-in-time integration workshop, Marseille (July 2022)

A stable parareal like scheme for the second-order wave equation, 8th Parallel-in-Time Workshop, ZiF, Bielefeld, Germany (May 2019).

Parallel-in-time for the second-order wave equation, Minisymposium at SIAM Computational Science and Engineering, Spokane, WA (Feb 2019).

GRANTS AND
AWARDS

2019	Juelich Supercomputing Centre Travel Grant to present at the 8 th Parallel-in-Time Workshop, ZiF, Bielefeld, Germany
2014–2018	National Initiative for Modeling and Simulation Graduate Research Fellowship, Institute for Computational Engineering and Sciences
2014–2016	Vietnam Education Foundation Fellowship
2013	Edmond B. Franklin Scholarship, School of Physics and Astronomy, University of Minnesota, Twin Cities

SEMINAR TALKS
AND POSTERS

Deep Learning aided Solutions for Wave Equation, Karlsruhe Institute of Technology (Sept 2021).

Data-driven parareal for solutions of the wave equation, University of Basel (Jan 2020).

Parallel-in-time coupling of Gaussian beam and Direct Numerical Simulation, Workshop for Advances in Computational Sciences and Engineering, UT-Austin (Mar 2017).

θ -parareal for wave equation, Texas Imaging Symposium, UT-Austin (Oct 2018).

Gaussian beam method for high frequency wave propagation, Math Jr. Numerical Analysis Seminar, UT-Austin (April 2016).

TEACHING
EXPERIENCE

Fall	2018	Teaching Assistant, Calculus I
Fall	2017	Instructor Intern, Mathematical Modeling
Fall	2015	Teaching Assistant, Calculus II
Spring	2013	Undergraduate Teaching Assistant, Physics II
Fall	2012	Undergraduate Teaching Assistant, Physics I

EXTENDED
PROFESSIONAL
COURSE

Sep	2021	Summer School: Wave phenomena : Analysis and Numerics, Karlsruhe Institute of Technology, Karlsruhe
Aug	2021	11th Zurich Summer School, Institute of Mathematics University of Zurich, Zurich
May	2018	Wave Imaging in Random media, Department of Mathematics Colorado State University, Fort Collins
June	2017	Math-to-Industry Bootcamp II, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis
June	2015	AARMS-PIMS Summer School in Differential Equations and Numerical Analysis, Department of Mathematics, Dalhousie Univeristy, Halifax, Canada

GRADUATE
COURSEWORK

<input type="checkbox"/> Numerical Linear Algebra	<input type="checkbox"/> Multiscale Modeling
<input type="checkbox"/> Mathematical Modeling	<input type="checkbox"/> Electromagnetic theory
<input type="checkbox"/> Functional Analysis	<input type="checkbox"/> Acoustics
<input type="checkbox"/> Numerical Differential Equations	<input type="checkbox"/> Seismic Imaging
<input type="checkbox"/> Convex Optimization	<input type="checkbox"/> Mathematical Methods in Engineering

SCIENTIFIC
RESEARCH
EXPERIENCE

2011–2012	Rendering art of Traveling Salesperson Problem . Supervisor: Fadil Santosa, Institute for Mathematics and its Applications, University of Minnesota, Twin Cities.
2011–2012	Data analysis of neutrino experiment. Supervisor: Gregory Pawloski, Department of Physics, University of Minnesota, Twin Cities.
2012–2013	Generation of magnetic field in magnetohydrodynamics. Supervisor: Thomas Jones, Department of Astronomy, University of Minnesota, Twin Cities.
2014	Reduced model for chemical reaction systems. Supervisor: Lam K. Huynh, Institute for Computational Science and Technology, Institute for Computational Science and Technology, Vietnam.

RELEVANT
SKILLS

Languages: Vietnamese (native), English (fluent), German (conversational)
 Computer: Linux, Python, MATLAB, Julia
 scikit-learn, Pytorch
[Deep Learning certificate](#),
 High Performance Computing, machine learning certificate at
 Texas Advanced Computing Center

RESEARCH
REFERENCES

Richard Tsai, Professor of Mathematics, Oden Institute for Computational Engineering and Sciences, University of Texas at Austin, (512) 232-7757, ytsai@math.utexas.edu