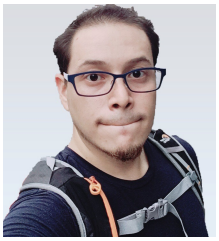


Manuel A.Diaz

High Performance Computing and Visualization Researcher

Address
37 Keyan Rd
Zhunan, Miaoli
35053, Taiwan

Tel & Skype
+886 0988 137646
manuel.ade

Mail
manuel.ade@nhri.edu.tw
manuel.ade@gmail.com

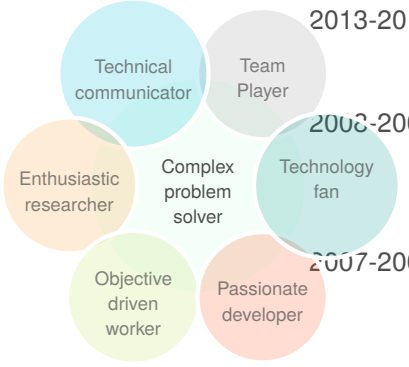
Web & Git
about.me/manuel.a.diaz
www.github.com/wme7

Programing
C/C++
Python
Matlab
Mathematica
LaTeX
Markdown
Bash

HPC Tools
OpenMP
MPI
CUDA

Visualization
OpenGL + CUDA

Personal Skills



Career Objectives

- To contribute to bridging the gap between high performance computing and the analysis & visualization of large data sets.
- To develop software tools that benefits the work of engineers and applied mathematicians.
- To maximize the impact of my work by translating technologies into industry.

Education

since 2015 **Ph.D. in Applied Mechanics**
National Taiwan University, Taiwan, GPA: 3.85/4.3
Dissertation: Modeling Rarefied Gas Flows of Arbitrary Statistics with the Semiclassical Boltzmann-BGK equation.

2003-2008 **Bachelor of Science in Mechanical Engineering**
Universidad Centroamericana "Jose Simeon Canas", El Salvador, GPA: 8.23/10.0
Concentration: Mechanical Design and Finite Element Modeling.

2000-2002 **Technician in Mechanical Engineering**
Instituto Técnico Ricaldone, El Salvador, GPA: 9.2/10
Mechanical Technology and Manufacturing of Machine Elements.

Academic and Research Interests

- Computational fluid dynamics,
- High-order finite difference methods,
- Finite element methods and discontinuous Galerkin schemes,
- Mathematical modeling and simulation of nonlinear transport phenomena,
- Parallel computing with multiple graphical processing units (GPUs),
- High performance computing,
- Machine Learning with Neural Networks,
- Data visualization with CUDA & OpenGL interoperability.

Experience

2016 to date **Postdoctoral Fellow**
National Health Research Institutes (NHRI), Taiwan
Objective: high-performance computing (HPC) solution for modeling strongly nonlinear ultrasound in multiple GPU accelerators and MPI.

2014-2015 **Laboratory Manager**
Institute of Applied Mechanics, NTU
Linux systems administrator and code curator.

2013-2014 **Graduate Teaching Assistant**
Institute of Applied Mechanics, NTU
T.A. for the Electrostatics class.

2008-2009 **Mechanical Designer**
Ingendehsa S.A. de C.V.
Objective: cranes, pressure pipes and water gates mechanical design for a hydropower plant.

2007-2008 **Bachelor Research Assistant**
Mechanical Department, UCA
Objective: analyze steam distribution networks and propose design modifications to minimize heat transfer losses.

OS Preference

GNU/Linux ★★★★★
MacOS ★★★★☆
Windows ★★★☆☆

Places Lived

EL Salvador
Taiwan

Languages

Spanish ★★★★★
English ★★★★★
Chinese ★★☆☆☆

Awards

2014 **Faculty Scholarship**
National Taiwan Univeristy (NTU)
Awarded to top students of PhD degree.

2011 **Best Individual Project**
Institute of Applied Mechanics, NTU
Best project award. Electronics class. Fall semester of 2010.

2010 **Taiwan Scholarship Recipient**
Ministry of Foreign Affairs of Taiwan, El Salvador
Awarded to top graduates from El Salvador.

2008 **Top Mechanical Engineering Graduate**
Salvadorian Association of Mechanical, Electrical and Industrial Engineers
Awarded to top bachelor graduate of El Salvador.

2008 **Top Mechanical Engineering Graduate**
Universidad Centroamericana (UCA) JSC, El Salvador
Awarded to top bachelor graduate of El Salvador.

Publications

Doctoral Dissertation

Modeling Rarefied Gas Flows of Arbitrary Statistics with the Semiclassical Boltzmann-BGK Equation
Diaz, Manuel A.
Institute of Applied Mechanics, Taiwan University (2015) pp. 1–120. Taiwan University, 2015

Articles in Peer-reviewed Journals

An Efficient Direct Solver for Rarefied Gas Flows with Arbitrary Statistics
Diaz, Manuel A and Jaw-Yen Yang
Journal of Computational Physics 305 (2016) pp. 127–149. Elsevier, 2016

High-Order Conservative Asymptotic-Preserving Schemes for Modeling Rarefied Gas Dynamical Flows with Boltzmann-BGK Equation
Diaz, Manuel A, Min-Hung Chen, and Jaw-Yen Yang
Communications in Computational Physics 18.4 (2015) pp. 1012–1049. Cambridge University Press, 2015

Asymptotic-Preserving Weno Schemes for Boltzmann Model Equations and Rarefied Gas Flow Simulation
Yang, Jaw-Yen, Manuel Diaz, WY Kang, and JC Huang
Proceedings of the Korea Society of Computational Fluids Engineering Conference (2014) pp. 344–348. 2014

Estimations of heat conductivity and perfusion for MRI guided high-intensity focused ultrasound treatments
Diaz, Manuel A., Hong-An Deng, Elena Korshunova, Maxim A. Solovchuk, and Tony W.H. Sheu
PLOS (2017 to be submitted). 2017 to be submitted

A Conservative Numerical Scheme for Modeling Nonlinear Acoustic Propagations in Thermoviscous Homogeneous Media
Diaz, Manuel A., Maxim A. Solovchuk, and Tony W.H. Sheu
Journal of Computational Physics (2017, submitted). 2017, submitted

Conservative Finite Amplitude Models for Describing Nonlinear Acoustic Propagation
Diaz, Manuel A., Maxim A. Solovchuk, and Tony W.H. Sheu
Journal of Acoustical Society of America (2017 to be submitted). 2017 to be submitted

Articles Peer-reviewed Proceedings

Numerical Solutions of Ideal Quantum Gas Dynamical Flows Governed by Semiclassical Ellipsoidal-Statistical Distribution
Yang, Jaw-Yen, Chih-Yuan Yan, Manuel Diaz, Juan-Chen Huang, Zhihui Li, and Hanxin Zhang
The Royal Society vol. 470.2161 (2014). 2014

High Performing Acoustic Multi-GPU Solver for Describing Nonlinear Acoustic Waves in Homogeneous Thermoviscous Media
Diaz, Manuel A., Maxim A. Solovchuk, and Tony W.H. Sheu
Journal of Computer & Fluids (2017, submitted). 2017, submitted

Personal References

- *Prof. Maxim Solovchuk*, **Current Advisor**, `solovchuk@nhri.org.tw`
- *Ms. Elena Korshunova*, **co-author**, `helene.korshunova@gmail.com`
- *Prof. Jaw-Yen Yang*, **PhD advisor**, `yangjy@iam.ntu.edu.tw`
- *Prof. Yi-Ju Chou*, **academic advisor**, `yjchou@iam.ntu.edu.tw`
- *Prof. Juan-Chen Huang*, **co-author**, `jchuang@mail.ntou.edu.tw`
- *Prof. Min-Hung Chen*, **co-author**, `mhchen@iam.ntu.edu.tw`
- *Ing. José Landaverde*, **Ingendehsa**, `hlandaverde@navegante.com.sv`
- *Ing. Mario Chavez*, **UCA energy dept. director**, `mchavez@uca.edu.sv`

Other Info

I hereby declare that the information provided is true and accurate.

Manuel A. Diaz
October 15, 2017