PROFESSIONAL EXPERIENCE

2018/11-Present CIMAS - University of Miami, NOAA - Hurricane Research Division

<u>Senior Software Engineer (since 2021/04):</u> Development of the code COSS, Consolidated Observing Systems Simulator.
- *Parallel/multicore/multithreaded programming.*
- *Supercomputing.*
- *Fortran 2018.*
- *C++11x.*
- *Fortran/C++ interoperability.*
- *MPI.*
- *Linux scripting.*
- *Debugging.*
- *Unit Testing.*
- *File formats: NetCDF, Grib, NEMSIO, BUFR*

2017/12-2018/11 NOAA, SEFSC

<u>High Performance Application Programmer:</u> Collaboration (non-remunerated). Performed more than 20,000 simulations using the in-house code developed during 2016-2017. Performed optimizations/debugging/upgrades to the simulation platform.
- *Parallel/multicore/multithreaded programming*
- *Supercomputing*
- *Fortran 2008.*
- *C++11x*
- *Fortran/C++ interoperability*
- *MPI*
- *POSIX*
- *Concurrent programming*
- *Linux scripting*
- *Software Engineering*
- *Debugging*
- *Unit Testing*
- *Particle tracking algorithms (forward and backward in time)*

2016/06-2017/12 NOAA, SEFSC (Caelum Research Corporation/ERT Corp)

<u>High Performance Application Programmer:</u> Development of an HPC code to perform massive simulations of marine larvae. Construction and development of the simulation platform, including the simulation database (+40 TB) and input templates (+10,000 files).
- *Parallel/multicore/multithreaded programming*
- *Supercomputing*
- *Fortran 2008.*
- *C++11x*
- *Fortran/C++ interoperability*
- *MPI*
- *POSIX*
- *Concurrent programming*
- *Linux scripting*
- *Software Engineering*
- *Debugging*
- *Unit Testing*
- *Particle tracking algorithms (forward and backward in time)*

2015/11-2016/06 Florida Space Institute/University of Central Florida

Scientific Programmer: Collaboration (non-remunerated). Mayor upgrade of the code Open Orb (OORB) to perform simulations of the solar system

- *Fortran 2008*
- *Linux scripting*
- *Software Engineering*
- *Debugging*
- *Unit Testing*

2015/05-2016/06 University of Central Florida

Research Associate: Collaboration (non-remunerated). Development of a parallel/multicore code to perform Direct Numerical Simulations (DNS) of turbulent incompressible flow

- *Direct Numerical Simulation (DNS) of turbulent flow.*
- *Parallel/multicore/multithreaded programming*
- *C++11x*
- *MPI*
- *POSIX*
- *Software Engineering*
- *Debugging*
- *Unit Testing*
- *Concurrent Programming*

2008/09-2015/05 University of Central Florida:

Graduate Teaching Assistant:
- *Grade exams.*
- *Teach labs.*
- *Teach recitation classes.*
- *Teach graduate classes when requested by advisor.*
- *List of courses taught to follow.*

Doctoral Research:
- *Computational Fluid Dynamics (CFD)*
- *Direct Numerical Simulation (DNS) of turbulent flow*
- *Meshless methods applied to CFD*
- *Parallel/multicore/multithreaded programming*
- *MPI*
- *POSIX*
- *Software Engineering*
- *Debugging*
- *Unit Testing*
- *Concurrent Programming*

1994/01-2008/09 Universidad Simón Bolívar. Department of Thermodynamics and Transport Phenomena.

Faculty Member with Tenure:
- *Taught undergraduate/graduate courses for Chemical, Mechanical, Materials and Production Engineering students.*
- *Participated in commission to evaluate academic credentials of new faculties*
- *Promoted to Associate Professor in April 2005.*

Research:
- *Computational Fluid Dynamics (CFD)*
- *Development of linear solvers: Direct and iterative*
- *RANS turbulence modeling*
- *Velocity-pressure coupling algorithms: Direct and segregated*

- Magnetohydrodynamic flow
- C# .NET programming

1989/01-1989/05 US MOTORS, Saint Louis, Missouri, USA

Internship:

- Conversion and implementation to a Personal Computer of the main software for the design of electric motors.

1989/07-1989/09 EMERSON ELECTRIC, Caracas, Venezuela

Internship: *Design and construction of an oven of thermal treatment for electric motors*

1987/01-1988/12 Instituto Venezolano de Investigaciones Científicas (IVIC),
Laboratory of Computational Chemistry/Scientific Center, IBM, Caracas, Venezuela

Assistant Student of Dr Fernando Ruette: *Recoding and testing of the program MINDO, for the simulation of chemical catalysis.*
- Fortran 77 (IBM/Sun systems)

COURSES TAUGHT

Universidad Simón Bolívar;

1. TF1313: Numerical Methods for Chemical Engineering
2. TF1221: Transport Phenomena I
3. TF2241: Transport Phenomena II
4. TF2251: Heat Transfer I for Mechanical Engineering
5. TF2252: Heat Transfer II for Mechanical Engineering
6. TF7362: Numerical Methods (graduate level)

University of Central Florida:

1. EML3701: Fluid Mechanics I
2. GTA of courses:

   2.1) EML3034: Modeling methods for Mechanical Aerospace Engineering
   2.2) EAS3101: Fundamentals of Aerodynamics
   2.3) EML3101: Thermodynamics of Mechanical Systems
   2.4) EML5060: Mathematical Methods in Mechanical and Aerospace
   Engineering (graduate level)
   2.5) EML5066: Computational Methods in Mechanical, Materials and Aerospace
   Engineering (graduate level)