Jason F. Ventrella

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Phone: (225) 288-3721; Email: ventrella@alum.mit.edu

OBJECTIVE

Seeking employment as a software engineer solving interesting problems. Eager to tackle problems involving artificial neural networks, numerical methods, and nonlinear partial differential equations.

EDUCATION

University of Texas at Austin
Ph.D. in Physics, 2002
Massachusetts Institute of Technology, Cambridge, MA
S.B. in Physics, 1996

WORK EXPERIENCE

Research Associate — **Center for Computation and Technology**
Louisiana State University — **Sep 2004–present**
Developed an elliptic nonlinear partial differential equation solver which uses artificial neural networks. It is equal in accuracy to the spectral methods we use but can interpolate many times faster and uses far less computational resources. It is a significant advance and is being integrated into toolkits for other research groups because of its general applicability, efficiency, and accuracy.
Involved in many domestic and international collaborations to solve Einstein's equations numerically and investigate orbiting black holes.

Research Associate — **Hearne Institute**
Louisiana State University — **Jan 2003–Aug 2004**
Numerical relativist solving Einstein's equations. Designed highly accurate, hyperbolic spectral solver to study nonlinear field equations numerically. Designed and constructed a 48 processor Beowulf cluster used by the Hearne Institute and collaborators to solve problems of interest in numerical relativity.

Graduate Research Assistant — **Center for Relativity**
University of Texas at Austin — **Aug 1996–Dec 2002**
Studied the evolution of nonlinear field equations numerically via adaptive finite difference techniques. Researched and developed the use of Chebyshev pseudospectral methods to solve hyperbolic, parabolic, and elliptic nonlinear partial differential equations in the field of numerical relativity.

System Administrator — **Numerical Relativity**
University of British Columbia — **Sept 1999–July 2001**
Helped design and construct the 128 processor Beowulf cluster at the University of British Columbia. At the time of its construction in the fall of 1999 it was the largest academic computer in B.C.

System Administrator — **Center for Relativity**
University of Texas at Austin — **May 1998–Sept 1999**
Became the system administrator for the physics department but after designing the graduate computer lab and improving security I was offered the system administrator position in the Center for Relativity where I was responsible for SGI workstations and our scientific data. I successfully renegotiated our parts care contracts which freed up thousands of dollars per year for research.

Assistant Instructor — **Department of Physics**
University of Texas at Austin — **Aug 1996–May 1998**
Teaching assistant for an introductory physics laboratory course for non-science majors. Due to excellent evaluations from my students I was promoted to assistant instructor and developed my own lesson plans.

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SPECIAL SKILLS

- Designing artificial neural networks (ANNs) and their training algorithms.
- Writing programs to implement computational methods for scientific problem solving.
- Using finite-difference, spectral methods, and ANNs to solve parabolic, hyperbolic, and elliptic nonlinear partial differential equations. (10 years experience)
- Programming experience with Fortran 77, Fortran 90, C/C++, Python, Perl, Maple, Mathematica, Html.
- Effective communication to teach courses and conduct seminars.
- System administration of Linux workstations, Beowulf clusters, PC's, SGI, SUN, and AIX systems.
- Design and construction of Beowulf Clusters.

SOCIETIES

American Mensa
American Physical Society

PERSONAL

Citizenship: USA

REFERENCES

Available on request