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Ron A. Oldfield

December 13 2002

Education

B.Sc.	Computer Science (Math minor)	University of New Mexico	1988-1993
Ph.D Candidate	Computer Science	Dartmouth College	1997-2003 (expected)

Work Experience

1992-1993: Sandia National Laboratories

Associate Western Universities Fellowship at Sandia National Laboratories (Albuquerque, NM)

- Developed software for visualization and design of 3D molecular models and animation of molecular dynamics simulations.

1994-1997: Sandia National Laboratories

Limited-term technical staff at Sandia National Laboratories (Albuquerque, NM)

- Primary developer for the GONII-SSD (Gas and Oil National Information Infrastructure-Synthetic Seismic Dataset) project. Implemented a parallel 3D finite-difference acoustic wave propagation code that was used to generate part of a large (multi-terabyte) synthetic seismic data set.
- Co-developer for the ACTI-16 project "3D Seismic Imaging of Complex Geologies". Developed parallel I/O algorithms for a seismic imaging application (Salvo) that ran on massively parallel architectures.

1998-2000: CRREL

Technical consultant for the Cold Regions Research and Engineering Laboratory (Hanover, NH)

- Assisted in the development of a portable parallel 3D finite-difference seismic wave propagation code. Also assisted in code debugging and visualization of results.
- Provided instruction on how to optimize message passing and I/O for a parallel seismic code.

Research Interests

Parallel I/O, multiprocessor file systems, wide-area distributed computing, parallel scientific computing, and mobile computing.

Publications

Invited Book Chapters (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. Scientific applications using parallel I/O. In Hai Jin, Toni Cortes, and Rajkumar Buyya, editors, *High Performance Mass Storage and Parallel I/O: Technologies and Applications*, chapter 45, pages 655–666. IEEE Computer Society Press and John Wiley & Sons, 2001.

Refereed Journal Papers (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. Armada: a parallel I/O framework for computational grids. *Future Generation Computing Systems (FGCS)*, 18(4):501–523, March 2002.
2. Ron A. Oldfield, David E. Womble, and Curtis C. Ober. Efficient parallel I/O in seismic imaging. *The International Journal of High Performance Computing Applications*, 12(3):333–344, Fall 1998.

Journal Papers in Preparation (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. Improving I/O access paths for geographically distributed data-intensive applications. In preparation, May 2002. For submission to IEEE Transactions on Parallel and Distributed Systems.

Refereed Conference Papers (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. Armada: A parallel file system for computational grids. In *Proceedings of the First IEEE/ACM International Symposium on Cluster Computing and the Grid*, pages 194–201. IEEE Computer Society Press, Brisbane, Australia, May 2001.
2. Curtis Ober, Ron Oldfield, David Womble, L. Romero, and Charles Burch. Practical aspects of prestack depth migration with finite differences. In *Proceedings of the 67th Annual International Meeting of the Society of Exploration Geophysicists*, pages 1758–1761. Dallas Texas, November 1997. Expanded Abstracts.
3. Curtis Ober, Ron Oldfield, David Womble, John VanDyke, and Sudip Dosanjh. Seismic imaging on massively parallel computers. In *Proceedings of the 1996 Simulations Multiconference*. April 1996.
4. D.E. Womble, S.S. Dosanjh, J.P. VanDyke, R.A. Oldfield, and D.S. Greenberg. 3-d seismic imaging of complex geologies. In *High Performance Computing Symposium 1995 'Grand Challenges in Computer Simulation'*. *Proceedings of the 1995 Simulation Multiconference*, pages 405–410. Pheonix, AZ, April 1995.
5. Ron A. Oldfield, B. D. Semeraro, and J. P. VanDyke. Parallel acoustic wave propagation and generation of a seismic dataset. In *Proceedings of the Seventh SIAM Conference on Parallel Processing for Scientific Computing*, pages 243–244. San Fransisco, CA, February 1995.

Technical Reports (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. Using the Emulab network testbed to evaluate the Armada I/O framework for computational grids. Technical Report TR2002-433, Dept. of Computer Science, Dartmouth College, Hanover, NH, September 2002.
2. Ron Oldfield and David Kotz. Applications of parallel I/O. Technical Report PCS-TR98-337, Dept. of Computer Science, Dartmouth College, August 1998. Supplement to PCS-TR96-297.
3. Curtis Ober, Ron Oldfield, John VanDyke, and David Womble. Seismic imaging on massively parallel computers. Technical Report SAND96-1112, Sandia National Laboratories, April 1996.

Other Papers (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. The Armada framework for parallel I/O on computational grids. Work-in-progress report at the Conference on File and Storage Technologies, January 2002.
2. Ron Oldfield. Summary of existing and developing data grids, March 2001. White paper for the Remote Data Access group of the Global Grid Forum.
3. Ron Oldfield. A study of extensible operating systems. Unpublished manuscript, Winter 1998.
4. Ron Oldfield and David Kotz. The Armada parallel file system, November 1998. Unpublished.

Invited Talks and Colloquiums (in approximate reverse chronological order)

1. Ron Oldfield and David Kotz. Flexible parallel I/O for computational grids. Ph.D. thesis proposal for the Department of Computer Science, Dartmouth College, Hanover, NH, May 2000.
2. Ron Oldfield and Reagan Moore. Summary of Existing Data Grids (Grids for a federation of data, Applications that use the grid). Invited talk for the plenary session of the Fourth Grid Forum, Microsoft, Redmond, WA, July 2000.
3. Ron Oldfield. Flexible Parallel I/O for Computational Grids. Invited talk at Sandia National Laboratories, Albuquerque, NM, March 2000.
4. Ron Oldfield. The Armada parallel file system. Invited talk at Sandia National Laboratories, Albuquerque, NM, October 1998.
5. Ron Oldfield and David Kotz. The Armada parallel file system. Department of Computer Science graduate student colloquium, Dartmouth College, Hanover, NH, October 1998.
6. Ron Oldfield, Curtis Ober, and David Womble. Parallel I/O for seismic imaging. Department of Computer Science colloquium, Dartmouth College, Hanover, NH, September 1996.
7. Ron Oldfield. Generating a large synthetic seismic dataset on the Paragon Supercomputer. Invited talk at birds-of-a-feather session of SC'95, San Diego, CA, November 1995.

Honors and Awards

While at Dartmouth College

- Best Paper in the Grid category, *First ACM/IEEE International Symposium on Cluster Computing and the Grid* (2001)

While at Sandia National Laboratories

- Sandia National Laboratories Award For Excellence– For quickly developing an MP seismic imaging code based on finite-difference methods that achieves very high performance. (1995)
- Nominated for Sandia employee recognition award, team category. (1996)
- R&D Magazine award for one of the 100 most technologically significant new products of the year. For Salvo seismic imaging software. (1998)
- Sandia employee recognition award, team category. For Salvo seismic imaging software. (2000)

While at the University of New Mexico

- Excel Academic Scholarship (1988–1992)
- Partial Baseball Scholarship (1989-1990)
- Dean’s List (1991)
- Golden Key National Honor Society (1991)
- Kappa Mu Epsilon Math Honor Society (1991)
- Associated Western Universities Fellowship (1992)

Professional Activities

Research Forums

- *MPI Forum*: Participated in discussion of parallel I/O interface for MPI. (1995)
- *Global Grid Forum*: Active participant since 1999. Authored paper, “Summary of existing and developing data grids”, presented in plenary session of the Fourth Grid Forum meeting at Microsoft, Redmond WA. (July 2000).

Journal Referee (in reverse chronological order)

- *Concurrency and Computation: Practice and Experience*, John Wiley & Sons publishers, January 2002.
- *IEEE Transactions on Parallel and Distributed Systems*, IEEE Computer Society Press, April 1999.

Conference Referee (in reverse chronological order)

- *IEEE International Conference on Cluster Computing (Cluster 2002)*, Chicago, IL, September 2002.
- *Euro-Par 2000 Workshop on Object-Oriented Architectures, Tools, and Applications*, Munich, Germany, September 2000.
- *USENIX Conference on File and Storage Technologies*, Monterey, CA, January 2002.
- *Fifth International Conference on High Performance Computing (HiPC’98)*, Chennai (Madras), India, December 1998.

References

Available upon request.