

DAVID O'HALLARON

Director, Intel Labs Pittsburgh
Associate Professor office: 8125 Wean Hall
Depts of CS and ECE phone: (412) 268-8199
5000 Forbes Avenue fax: (412) 268-5574
Carnegie Mellon University email: droh@cs.cmu.edu
Pittsburgh, PA 15213 web: www.cs.cmu.edu/~droh

Professional preparation

University of Virginia, Ph.D., Computer Science, *An Investigation of Models of Concurrent Programs*, 1986. M.S., Computer Science, 1983.

Virginia Tech, B.S., Computer Science, 1979.

Appointments

Intel Labs Pittsburgh. *Director*, 2007-present.

Carnegie Mellon University. *Associate Professor with tenure*, CS and ECE, 2002-present. *Associate Professor*, CS and ECE, 1998-2002. *Research Scientist*, CS, 1992-1998. *Systems Scientist*, CS, 1989-1992.

General Electric Research and Development Center, Schenectady, NY, Staff Scientist, 1986-1989. Research in parallel computing and applications.

Awards and honors

In 1998 the CMU School of Computer Science awarded Prof. O'Hallaron and the other members of the Quake Project the Allen Newell Medal for Research Excellence. In 2000, a benchmark he developed for the Quake project, 183.equake, was selected by SPEC for inclusion in the influential CPU2000 and CPU2000omp (Open MP) benchmark suites. In November, 2003, Prof O'Hallaron and the other members of the Quake team won the Gordon Bell Award for Special Achievement, one of the most prestigious prizes in the field of high performance computing. In Spring, 2004, he was awarded the Herbert Simon Award for Teaching Excellence by the Carnegie Mellon School of Computer Science. In 2005, he was awarded, with his Quake partners Jacobo Bielak and Omar Ghattas, the CIT Outstanding Research Award by the Carnegie Mellon School of Engineering. In 2006, his Quake research group won the HPC Analytics Challenge at SC06.

Related publications

STEVEN W. SCHLOSSER, MICHAEL P. RYAN, RICARDO TABORDA, JULIO LOPEZ, DAVID O.HALLARON, JACOBO BIELAK, Materialized community ground models for large-scale earthquake simulation, In *Proceedings of SC2008* (Austin, TX, Nov. 2008).

TU, T., YU, H., RAMIREZ-GUZMAN, L., BIELAK, J., GHATTAS, O., MA, K.-L., AND O'HALLARON, D. From mesh generations to scientific visualization: An end-to-end approach to parallel supercomputing. In *Proceedings of SC2006* (Tampa, FL, Nov. 2006).

TU, T., O'HALLARON, D. R., AND GHATTAS, O. Scalable parallel octree meshing for terascale applications. In *Proceedings of SC2005* (Seattle, WA, Nov. 2005).

TU, T., AND O'HALLARON, D. R. A computational database system for generating unstructured hexahedral meshes with billions of elements. In *Proceedings of SC2004* (Pittsburgh, PA, Nov. 2004).

AKCELIK, V., BIELAK, J., BIROS, G., IPANOMERITAKIS, I., FERNANDEZ, A., GHATTAS, O., KIM, E., O'HALLARON, D., AND TU, T. High resolution forward and inverse earthquake modeling on terasacale computers. In *SC2003* (Phoenix, AZ, Nov. 2003). *Winner, 2003 Gordon Bell Award for Special Achievement.*

Additional publications

PAPADOMANOLAKIS, S., AILAMAKI, A., LOPEZ, J., TU, T., O'HALLARON, D., AND HEBER, G. Efficient query processing on unstructured tetrahedral meshes. In *ACM SIGMOD* (Chicago, IL, June 2006).

NATH, P., KOZUCH, M. A., O'HALLARON, D. R., SATYANARAYANAN, M., TOLIA, N., AND TOUPS, M. Design tradeoffs in applying content addressable storage to enterprise-scale systems based on virtual machines. In *Usenix 2006 Annual Technical Conference* (Boston, MA, June 2006).

SATYANARAYANAN, M., KOZUCH, M., HELFRICH, C., AND O'HALLARON, D. R. Towards seamless mobility on pervasive hardware. *Pervasive & Mobile Computing* 1, 2 (June 2005).

BRYANT, R., AND O'HALLARON, D. *Computer Systems: A Programmer's Perspective*. Prentice-Hall, 2003.

BRYANT, R., AND O'HALLARON, D. Introducing computer systems from a programmer's perspective. In *Proc. of the 32nd Technical Symposium on Computer Science Education (SIGCSE)* (Charlotte, NC, Feb. 2001), ACM.

Synergistic activities

Prof. O'Hallaron's work has had significant impact on both industry and education. The CPU2000 and CPU200omp 183.equake benchmark will influence system design for years, primarily by forcing manufacturers to improve the ability of the memory systems to handle irregular address patterns. He has also developed a new core computer systems course, and written a textbook based on the course (R. Bryant and D. O'Hallaron, *Computer Systems: A Programmers Perspective*, Prentice-Hall, 2003). Hundreds of schools on five continents have adopted the book since its publication in August, 2003. The second edition will be available in Spring 2010.

External collaborators, advisors, and advisees

External collaborators: David Bantz (IBM), Jacobo Bielak (CMU CEE), Ramon Caceres (IBM), Thomas Gross (ETH Zurich), Omar Ghattas (U Texas), Gerd Heber (Cornel). Tom Jordan (USC/SCEC), Carl Kessleman (USC/ISI), Michael Kozuch (Intel), H.T. Kung (Harvard), Phil Maechlin (USC/SCEC), David Okaya (USC/SCEC), Kim Olsen (SDSU), Jonathan Shewchuk (UC Berkeley),

PhD Advisor: Paul Reynolds, Univ. of VA.

PhD Students: Thomas Warfel (Pitt Medical Center), Jonathan Shewchuk (UC Berkeley), Bwolen Yang (Google), Bruce Lowekamp (College of William & Mary), Peter Dinda (Northwestern University), Yinglian Xie (Carnegie Mellon), Julio López (CMU), Tiankai Tu (DE Shaw), Hyang-Ah Kim (Google).