DAVID O'HALLARON

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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

Carnegie Mellon University. *Professor*, CS and ECE, 2010–present. *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.

Intel Labs Pittsburgh. *Director*, 2007–2010. *Research Scientist*, 2010–present.

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 CMUSchool of Computer Science. In 2005, he was awarded the CIT Outstanding Research Award by the CMU School of Engineering. In 2006, his Quake research group won the HPC Analytics Challenge at SC06.

Related publications

LOPEZ, J., RAMIREZ-GUZMAN, L., BIELAK, J., AND O'HALLARON, D. BEMC: A searchable, compressed representation for large seismic wavefields. In *22nd International Conference on Scientific and Statistical Database Management (SSDBM'10)* (Heidelberg, Germany, June 2010).

AVETISYAN, A., CAMPBELL, R., GUPTA, I., HEATH, M., KOZUCH, S. Y. K. M., O'HALLARON, D., KUNZE, M., KWAN, T., LAI, K., LYONS, M., MILOJICIC, D., LEE, H. Y., SOH, Y. C., MING, N. K., LUKE, J.-Y., AND NAMGOONG, H. Open Cirrus: A global cloud computing testbed. *IEEE Computer* (Apr. 2010).

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).

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 Achievment.*

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).

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

BRYANT, R., AND O'HALLARON, D. *Computer Systems: A Programmer's Perspective, 2nd Edition.* Prentice-Hall, 2011.

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. While at Intel he was a founder of the Open Cirrus cloud computing testbed, sponsored by Intel, HP, and Yahoo, dedicated to cloud computing research and open source, with 14 academic and business business and academic partners from around the world. The CPU2000 and CPU2000omp `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, 2nd Edition, Prentice-Hall, 2011). Hundreds of schools on five continents have adopted the book since its initial publication in August, 2003.

External collaborators, advisors, and advisees

External collaborators: Jacobo Bielak (CMU CEE), Andrew Chien (Intel), Thomas Gross (ETH Zurich), Omar Ghattas (U Texas), Gerd Heber (Cornel). Tom Jordan (USC/SCEC), Carl Kessleman (USC/ISI), Michael Kozuch (Intel), Thomas Kwan (Yahoo), Dejan Milojicic (HP), Jonathan Shewchuk (UC Berkeley), John Wilkes (Google)

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).