Résumé for David H. Eberly

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Strengths

- **Software Engineering**. Experience in the development of small-scale and large-scale commercial products and working with teams of people from multiple disciplines. Extensive experience with software development tools for both CPU and GPU including debuggers, profilers and concurrency visualizers.
- **High-Performance Computing**. Experience in computational mathematics including computational geometry, numerical analysis and nonlinear optimization, graphics, physics, computer vision and image analysis.
- **Cross-platform development**. Microsoft Windows (Microsoft Visual Studio), Linux/Unix (CMake, Visual Studio Code). C++ 11/14/17, SIMD and multithreading, GPGPU (DirectX 11 with HLSL, OpenGL with GLSL, CUDA). Experience with C#. Limited experience with Mathematica.
- **General skills**. Algorithm development, problem solving and analytical reasoning, quality assurance and control by paying attention to all the details, the ability to balance theory and practice, and technical writing (books, product documentation, publications).

Professional History

- **Geometric Tools**. Chief Technologist (*Jan 2000–present, noncontiguous*). The company provides freely downloadable source code and documentation for computational mathematics including numerical analysis, computational geometry, real-time graphics, real-time physics and related topics. We also provide contract programming services. Areas of focus include
  - CPU: C++ 11/14/17, multithreading, SIMD
  - GPU: DirectX 11 (HLSL), OpenGL (GLSL), CUDA
  - High-performance computing, robust geometric computing, optimization
  - C#, mainly writing managed code to support high-performance C++/GPU native code

  Some recent topics in contracting include
  - Real-time performance for multiple cameras in surgical robotics (C#, C++, DX11)
  - Developing and implementing geometric algorithms for the airplane industry (C#)
  - Implementing algorithms for metrology (C#, C++, DX11)
  - Reverse engineering of 3D laser data for CAD/CAM (C++, DX11)

- **Omnivor Inc.** The company developed algorithms and software for generation of live-action AR/VR content from multiple cameras called *volumetric video*.
  - Senior Software Engineer (*Jun 2017–Apr 2018*)
- **Microsoft**. Worked in several research groups at Microsoft as a Principal Software Engineer.
  - Artificial Intelligence and Research Initiative (*Jan 2017–May 2017*)
  - Analog Science, Microsoft HoloLens research group (*Feb 2016–Dec 2016*)
  - Aditi Private Technologies Ltd, contracted for Microsoft Surface Hub; (*Jun 2015–Jan 2016*)
  - Startup Business Group, part of Microsoft Research; (*Nov 2010–Dec 2013*)
- **2XL Games, Inc.** Start-up game company developing games for Xbox 360 and Playstation 3.
  - PlayStation 3 Developer (*Jan 2007–Dec 2008*)
- **Numerical Design, Ltd.** The company developed one of the first commercial game engines using GPU hardware. The engine was named NetImmerse but later known as Gamebryo.
  - Joint Chief Technical Officer (*Oct 2004–Apr 2005*)
  - Director of Engineering (*Jan 1997–Aug 2000*)
- **SAS Institute, Inc.** Programmer on the SAS Insight project, a statistical graphics package.
  - Member of Applications Staff in Research and Development (*Sep 1995–Dec 1996*)
- **University of North Carolina at Chapel Hill**. Department of Computer Science, joint appointment in Department of Neurosurgery.
  - Research Associate Professor (*May 1994–Aug 1995*)
- **University of Texas at San Antonio**. Department of Mathematics, Computer Science and Statistics. Teaching and research in mathematics, computer science and engineering.
  - Associate Professor (*Sep 1990–Aug 1991*)
  - Assistant Professor (*Sep 1984–Aug 1990*)

Education

- Ph.D. (1994) and M.S. (1993) Computer Science, University of North Carolina
- Ph.D. (1984) and M.S. (1981) Mathematics, University of Colorado
- B.A. (1979) Mathematics, Bloomsburg University

Books, Publications, Video Game Credits

- Available via https://www.geometrictools.com/ContactInformation/DEberlyVitae.pdf