

# CHARLES F. ROSE, III, PH.D.

## OBJECTIVE

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I am principally a technologist and am only satisfied when I am working on technically and intellectually-challenging engineering problems. I have been both a key individual contributor and a technical leader. I find satisfaction in both roles and a challenging problem requiring me to do either will pique my interest.

## PROFESSIONAL EXPERIENCE

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### 2006 - present Adobe Systems, Inc.

Seattle, WA

#### *Senior Computer Scientist*

- Developer on Adobe Image Foundation project. AIF is a cross-platform system including a custom shading language for describing single and multi-stage image processing filters. *Compiler-construction, OpenGL, MacOSX, Vista, GPU, many-core CPU, LLVM*

### 1995 - 2006 Microsoft Corporation

Redmond, WA

#### *Software Development Engineer (2000-2006)*

- Developer on HLSL compiler within the DirectX team. My specialty was mid-level optimization and value-range propagation infrastructure. *Compiler-construction, DirectX 10, GPU, Vista*
- Senior developer on next generation authorization team developing APIs for rich delegated policy expression for intra- and inter-system resource control. *C++, C#, Cryptography, Declarative techniques*
- Senior developer on adding elliptic curve cryptography support for Windows Vista smartcards. *Smartcards, C, ECC*
- SDE Lead for the XrML team working on managed and native support of XrML 2.x / MPEG ISO REL standard. Product is underway. *C#, Dsig, XML, XPath, Schema, .NET, Cryptography*

■ A principal developer on the Windows Rights Management client-side security product, i.e. "lockbox". I developed a clean-room XML/XrML1.2 parser and license binder. I owned the surface area API development for the lockbox, so handled features such a license revocation, attestation, security environment setup, etc. *C++, XML, Cryptography, DRM*

#### *Research Software Development Engineer (1995-2000 + some research work since)*

- Assisted with papers from MSR/Beijing graphics group.
- Lead a research project to study uses of radial basis function (RBF) interpolated animation for use in high accuracy, real-time inverse-kinematics. Resulted in patent and publication. *C++, VB, Direct3D*
- Studied use of RBF interpolation for mesh-based skinning of linked characters along with Peter-Pike Sloan & Michael Cohen resulting in patent and publication. *C++, VB, Direct3D*
- Principal developer and primary researcher to study uses of RBF interpolation for use in real-time controllable animation which keeps artist's intent. Resulted in publications and a patent, which has issued. *C++, VB, OpenGL*
- Principal developer and co-researcher to study using BFGS non-linear optimization for stable motion capture analysis. *C++, VB, OpenGL*
- Principal developer for research project led by Brian Guenter to study use of torque-minimized animation for motion capture transitions. Resulted in publication and a patent, which has issued. *C++, VB, OpenGL*

## EDUCATION

- 1992-1999**            **Princeton University (part time after 1995)**            **Princeton, NJ**  
*Ph.D. Computer Science 1999*
- Specialized in fast techniques for real time artist-directed animation using radial basis functions to set up  $n$ -dimensional control functions. See the “Professional” section of [www.cfr3.com](http://www.cfr3.com) for details. Michael F. Cohen was my thesis advisor (and later my manager at Microsoft Research).
- 1988-1992**            **Trenton State College / TCNJ**            **Ewing, NJ**  
*B.S. Computer Science 1992 (with college honors and Summa Cum Laude)*

## PUBLICATIONS

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- Hong, Chen, Ziqiang Liu, Charles F. Rose, III, Ying-Qing Xu, Harry Shum, and David Salesin. **Example-Based Composite Sketching of Human Portraits**. *Non-Photorealistic Animation and Rendering 2004*.
- Rose, III, Charles F., Peter-Pike Sloan, and Michael F. Cohen. **Artist-Directed Inverse Kinematics Using Radial Basis Functions**. *Eurographics 2001*.
- Sloan, Peter-Pike, Charles F. Rose, III, and Michael F. Cohen. **Shape by Example**. *Interactive 3D Symposium 2001*.
- Guenter, Brian and Charles F. Rose, III. **Derivations of the Balafoutis and Patel Dynamics Formulation**. *Microsoft Research Tech Report MSR-TR-2000-80, 2000*.
- Cohen, Michael F., Charles F. Rose, III, and Peter-Pike Sloan. **Shape and Animation by Example**. *Microsoft Research Tech Report MSR-TR-2000-79, 2000*.
- Rose, III, Charles F. **Verbs and Adverbs: Multidimensional Motion Interpolation Using Radial Basis Functions**. *Ph.D. Thesis, Princeton University, 1999*.
- Rose, III, Charles F., Michael F. Cohen, and Bobby Bodenheimer. **Verbs & Adverbs: Multidimensional Motion Interpolation**. *IEEE Computer Graphics and Applications, Volume 18, Number 5 (1998)*.
- Bodenheimer, Bobby, Charles F. Rose, III, Seth Rosenthal, and John Pella. **The Process of Motion Capture: Dealing with the Data**. *Computer Animation and Simulation 1997*.
- Rose, III, Charles F., Brian Guenter, Bobby Bodenheimer, and Michael F. Cohen. **Efficient Generation of Motion Transitions Using Spacetime Constraints**. *Siggraph 1996*.

## PATENTS

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- Rose, III, Charles F., Peter-Pike Sloan, and Michael F. Cohen. **Interpolation Using Radial Basis Functions with Applications to Inverse Kinematics**. *U.S. Patent # 6,856,319, Submitted 2002, Issued 2005*.
- Rose, III, Charles F., Michael F. Cohen, and Bobby Bodenheimer. **System and Method of Multidimensional Motion Interpolation Using Verbs and Adverbs**. *U.S. Patent #6462742 B1, Submitted 1999, Issued 2002*.
- Guenter, Brian, Charles F. Rose, III, Michael F. Cohen, Bobby Bodenheimer. **Generating Optimized Motion Transitions for Computer Animated Objects**. *U.S. Patent # 5982389, Submitted 1996, Issued 1999*.
- Paramasivam, M., Varugis Kurien, Paul England, Charles F. Rose, III. **Object Certification Groups**. *Submitted 2005*.
- Paramasivam, M., Charles F. Rose, III, Nicolas Payette. **Supporting Statements for Credential-Based Access Control**. *Submitted 2005*.
- Kostal, Gregg, M. Paramasivam, Ravindra Pandya, Scott C. Cottrille, Vasantha K. Ravula, Vladimir Yarmolenko, Charles F. Rose, III, Yahui Zhong. **Format Agnostic System and Method for Issuing Certificates**. *Submitted 2005*.
- Blair, Dillaway, Brian LaMacchia, Ravi Pandya, M. Paramasivam, Charles F. Rose, III. **Delegation Control for Distributed Security System**. *Submitted 2005*.
- Lafornera, Philip, Rushmi Malaviarachchi, John Manferdelli, Michael Marr, Charles F. Rose, III, Bradley Serbus. **Enhancing Digital Rights Management System Security Through Policy Enforcement** *Submitted 2004*.
- Dillaway, Blair, Philip Lafornera, Brian LaMacchia, Rushmi Malaviarachchi, John Manferdelli, Charles F. Rose, III. **Revocation of a Certificate and Exclusion of Other Principals in a Digital Rights Management (DRM) System Based on a Revocation List from a Delegated Revocation Authority**. *Submitted 2003*.
- Bourne, Steve, Blair Dillaway, Pierre Jacomet, Rushmi Malaviarachchi, Kumar Parambir, Yevgeniy Rozenfeld, Chandramouli Venkatesh, Charles F. Rose, III. **Issuing a Publisher Use License Off-Line in a Digital Rights Management (DRM) System**. *Submitted 2003*.

