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Jeffrey A Bloom

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Summary

Jeffrey Bloom is an executive in the fields of computer vision, multimedia security, processing, and streaming with a proven track record of success managing technical teams across the spectrum of development, from research to product deployment and support, to create solutions and IP that address business needs. He has experience building and retaining strong teams of dedicated, driven individuals and has the ability to establish, maintain, and communicate a vision to the team, others in the company, and to external customers and investors. He has successfully established strong relationships between internal organizations including research, engineering, testing, marketing, sales, and support.
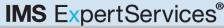
His ability to communicate well with internal and external customers insures that product and service requirements are well defined and that the right technologies are developed and deployed. With over 20 years experience, Dr. Bloom is well-known for his expertise in the fields of video analysis and content security and is an author of the primary text book in digital watermarking. He holds 13 patents with over 30 additional patents pending and has written numerous technical papers.

Highlights

- PhD in Electrical and Computer Engineering

- Strong competence in image and video analysis

- Significant project management experience

- Excellent customer communication skills and associated requirements development

- Ability to create and communicate a vision

- Experience creating a technical roadmap and managing Research and Development teams to meet the associated milestones and deliverables

- Ability to attract technical engineering and research talent

- Strong belief in and experience adopting Agile development methodologies

- Experience taking a project from idea to launch

- Appreciation for marketing influence on design and schedule

Last Updated: May 12, 2014

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Experience

2013 - Present   SiriusXM Satellite Radio   Lawrenceville, NJ

Director of System Engineering and Software Development for Conditional Access and Identity Management Systems

Lead a team of systems engineers, requirement analysts, and software developers responsible for all conditional access (CA) security systems. This includes CA systems to control delivery of satellite radio services to automobiles and other satellite signal receivers, CA systems to control the delivery of streaming audio services over the Internet, and CA systems to control delivery of telematics services to automobiles. All systems rely on cryptographic methods and systems for protecting content and managing keys. Identity Management infrastructure includes both SAML and OAuth solutions for federation and single sign-on.

2012   VideoTechResearch LLC   Princeton Jct, NJ

Video and Streaming Consultant

VideoTechResearch provides consulting services to local companies. Services include on-site systems engineering for multimedia security and streaming, pre-sales business development, project management, and strategy and roadmap development.

- **SiriusXM Satellite Radio** – Worked with the Streaming Services and Products group on the architecture of an IP streaming solution based on HLS with associated metadata. Wrote the primary API documentation for the back-end systems and provided support to partner client developers implementing clients based on that API. Provided testing and project management expertise.
- **DAX Technologies** – Worked with DAX executives to create a video quality monitoring solution proposal for external customers. This work included creating the story, creating the presentation and demonstration material, and making the presentation to customers, including Verizon. Created a roadmap and estimate of required investment for a new business.

2012 - Present   New Jersey Institute of Technology   Newark, NJ

Adjunct Professor – Electrical and Computer Engineering

Fall 2012: ECE643, a graduate level course in Digital Image Processing

2009 - 2012   Dialogic, Inc.   Eatontown, NJ

Director Video Technologies

Developed the technology and software components for a new QoE video quality monitoring and tracking business – enables monitoring and tracking of video quality across VOD and live streaming platforms – for publishers, aggregators, CDNs, OVPs, and service providers

- Built and managed a technical staff of 20 researchers, software engineers, project managers, and product managers
- Guided research team from initial explorations through creation of new technologies for advanced product features
- Oversaw creation of proof of concept demos, developed product concepts with customers
- Lead software development team from design, development, and delivery of first beta and all subsequent product releases
- High visibility with customers, understanding their workflows and operations
- Developed product roadmap and managed team to that roadmap, hitting all milestones and deliverables.
- Established best practice processes for requirements management, source control, project management (Agile), regression testing
- Development of strong IP base to maintain technical advantage

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Experience (continued)

2008 - 2009   Thomson, Inc. (Technicolor)   Burbank, CA

Research Center Director

- Manage a research center of 2 administrators and 15 researchers working in three groups: content security, signal processing, and content production and management.
- Management responsibilities include: staffing; budget; professional development; oversight of project management, proposal, and patent activity; marketing of Center to internal and external customers and to Corporate Research and Corporate management.
- Represent Thomson in local industry forums and with local customers.

2005–2009   Thomson, Inc. (Technicolor)   Princeton, NJ

Content Security Lab Manager

- Manage an international group of 10 researchers in the US, France, and Germany.
- Lead content security R&D efforts including conditional access systems, digital rights management systems, watermarking systems.
- Provide content security expertise and technical support for all Thomson business units
- Create intellectual property necessary to capture additional market share in existing markets and enable new products

2000–2005   Sarnoff Corporation   Princeton, NJ

Technology Leader

- Multimedia Security
  – Lead Sarnoff's digital watermarking research efforts; includes tracking watermarks for motion picture content; digital cinema watermarking; video database watermarking; removable visible attribution watermarks; authentication watermarks
  – Wrote successful NIST ATP proposal; PI for subsequent $2.1M, 18 mos effort to develop robust, high fidelity watermark; sponsor: NIST – Omid Omidvar
  – Development of Sarnoff's audio fingerprinting technology for audience monitoring and automatic audit log creation
- Machine Learning and User Modeling
  – Helped create Sarnoff's research program in *Model-Guided Search and Discovery*
  – Primary technical contributor to 8 government proposals and 2 commercial proposals
  – PI/PM for $600K, 2 yr program to develop an adaptive user model to increase the efficiency of a nearest neighbor search; results are being deployed within a commercial application; sponsor: Defense Logistics Agency – David Robinson
  – PI for $500K, 3 mos program to develop an unsupervised classifier to predict demographic category of a television viewer; results are being deployed within a commercial, set-top box application; commercial sponsor
  – PI/PM for $1M, 2 yr program to develop a model-guided search module that interacts with a domain ontology and a technology roadmap to identify documents relevant to a given domain; this module is part of a larger system designed to automate the knowledge discovery process; sponsor: NIST – Barbara Cuthill
  – Technical Lead for $325K, 1 yr program to develop a model-based anomaly detection mechanism for mobile agents in an ad-hoc, wireless network; sponsor: ARMY CECOM
  – Technical Lead for $400K, 1 yr program develop user models for recommendation engine; sponsor ARMY CECOM – Fred Wills
  – PM for $2M, 2 yr program to apply machine learning and anomaly detection techniques to automatically identify events of interest and suspicious activity from surveillance video; sponsor: ARDA/NGA – Matt Dominique

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Experience (continued)	1998–2000	NEC Research Institute / Signafy, Inc.	Princeton, NJ

Research Scientist

- Digital Watermarking
  - Development of a number of still image watermarking products
  - Development of two video watermarking technologies designed for broadcast monitoring and copy protection respectively
  - Design, implementation, and execution of testing and evaluation procedures for video watermarking technologies
  - Presentation and support of DVD copy protection watermarking proposal within the Data Hiding SubGroup of the Copy Protection Technical Working Group (CPTWG)
  - Design, presentation, and support of combined NEC/IBM DVD copy protection watermark, later known as the Galaxy group watermark after gaining the support of Sony, Hitatchi, and Pioneer.

Education	2009	Sloan School of Management, MIT	Cambridge, MA

- **Executive Certificate in Management and Leadership**

	1999	University of California	Davis, CA

- **Ph.D. Electrical and Computer Engineering**
- Thesis: The Derivative of Gaussian Transform, Advisor: Todd Reed
- U.S. Department of Education GAANN Fellow, TRW Fellowship.

This work represents a study of models of the human visual system and the use of one such model to design and build 2D and 3D spatial and spatio-temporal transforms for images and image sequences. This transform was then used to build image and image sequence compression algorithms that are competitive with JPEG and H.261 respectively.

	1990	Worcester Polytechnic Institute	Worcester, MA

- **M.S. Electrical and Computer Engineering**
- Thesis: Feature Extraction and Surface Recognition of Arbitrary Surfaces from Range Data, Advisor: Chang Choo

This research focused on the modeling of surface data clouds, as might be obtained from current lidar systems. An adaptive optimization method is applied to a standard triangular mesh to align mesh nodes with 3D feature points.

	1987	Worcester Polytechnic Institute	Worcester, MA

- **B.S. Electrical Engineering**
- Senior Thesis: Hybrid Analog/Digital Computing, Advisor: Peter Lanyon

Clearance	U. S. Citizen; Secret Clearance (lapsed)

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Technical Community	• Associate Editor, EURASIP Journal on Information Security, 2006 - 2014

Technical Community

- Associate Editor, EURASIP Journal on Information Security, 2006 - 2014
- Associate Editor, Springer LNCS Transactions on Data Hiding and Multimedia Security, 2006 - 2014
- Technical Program Committee, IEEE International Conference on Images Processing, 2014
- Technical Program Committee, International Workshop on Quality of Multimedia Experience (QoMEX), 2010 - 2013
- Technical Program Committee, SPIE Security and Watermarking of Multimedia Contents, 2003 - 2014
- IEEE Multimedia Signal Processing Technical Committee, 2008-2012
  Member of the Technical Directions Subcommittee (2008-2009)
  Webmaster (2010-2012)
- Technical Program Committee, International Workshop on Digital Watermarking (IWDW), 2006 - 2010
- Additional Review Activies: Transactions on Evolutionary Computation, 2011; European Signal Processing Conference (EUSIPCO), 2008-2011; Journal of Digital Forensics, Security and Law, 2009; International Journal of Computer Mathematics, 2008

Patents

- 13 Granted Patents
- 23 Pending / Published Patents Applications
- 13 Filed / Unpublished Patent Applications
- Listing provided upon request

Books and Publications

- **Books** (2)

Digital Watermarking; by Ingemar J. Cox, Matthew L. Miller, and Jeffrey A. Bloom; Morgan Kaufmann Publishers, Inc., San Francisco, 2002.

Digital Watermarking and Steganography, 2nd Edition; by Ingemar J. Cox, Matthew L. Miller, Jeffrey A. Bloom, Jessica Fridrich, and Ton Kalker; Morgan Kaufmann Publishers, Inc., San Francisco, 2008.

- **Book Chapters** (2)

"Security and Rights Management in Digital Cinema", in *Digital Rights Management- Concepts and Applications*, edited by Shyam Sunder Kambhammettu, 2005.

"Security for Digital Cinema", in *Multimedia Security*, edited by Wenjun Zeng, Heather Yu, and Ching-Yung Lin, Elsevier, 2006.

- **Over 35 Technical Publications**
  Listing provided upon request

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