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MOBILE SOFTWARE INTERFACE LEADER

Technical and management experience in the software and scientific industries with a broad background in applied research. Recognized as an innovator in mobile human computer interaction with strength in building state-of-the-art prototypes and products generating a wide range of intellectual property. Possess proven project leadership skills defining and executing programs in large organizations, as well as products in startups. A technical leader with an ability to define a vision of the future as well as goals for engineers.

- ▶ Ability to bring innovations to market
- ▶ Creative and innovative
- ▶ Confident at managing software teams
- ▶ Strong architecture analysis

PROFESSIONAL EXPERIENCE AND SELECTED ACCOMPLISHMENTS**Consultant, MA***current*

- *AlphaSights*(UK) - CDN/mobile strategy, *ZalkindLaw* - SEO, *Dextrys* - mobile, *PilgrimWaters* – site+social media.

Nexage Inc., MA

2011

Director of Engineering, Device Software

- Ownership of the mobile product life cycle. Shipped Nexage's mobile SDK products including 4.0, which provided feature parity for iOS and Android developers. Driving a small engineering team who implemented all components of Nexage mobile media products for iOS, Android and RIM.
- Directed SDK development for Rovio (Angry Birds), which generates millions of transactions per hour. Engaged with Rovio to provide video, next-generation rich media (ORMMA), interstitial and banner ads.

Akamai Technologies Inc., MA

2010

Principal Architect

- Worked across the company to formulate and evangelize Akamai's mobile strategy. Provided architectural guidance to design a compelling product for the mobile market. Engaged with cross-functional teams including engineering, product management, operations and service and support.
- Assisted with the acquisition of Velocitude, a mobile content adaptation company. Generated the key technical due diligence report, directed the technical team integration and created resource plans.
- Engaged in a technical strategic planning for content acceleration within mobile operator networks.

Orange Labs Boston, MA**Senior Director of Research, mobile software lead**

2002 to 2009

- Created small highly motivated engineering teams specializing in mobile services using advanced Web applications. Promoted by France Télécom to senior expert in Web services '04 for technical contributions to the company. Defined the technical direction of the mobile Web, open mobile Linux handset design and multimodal interactions.
- Architected an open mobile device - developed in rapid succession a series (4) state-of-the-art high performance open mobile Linux handsets (20) with WebKit as the core Web layout engine for the visual interface. Led the design of *end-to-end* and *top-to-bottom* mobile Web application service architecture. Led distributed development teams with a custom device manufacturer FGWireless in Shanghai China.
- Developed mobile Web mini-applications – demonstrating the power of Web compliance for mobile services using JavaScript, AJAX, CSS and XHTML, DOM, and XMLHttpRequest. Applications for the HTC Android, Apple iPhone, Nokia N95, WM6.0 and Linux handsets. Knowledgeable of local/remote technical issues.
- Created mobile browsing services - using widgets on Opera Mobile (customized under contract) and Minimo (Mozilla contract) using Gecko for Orange mobile signature devices (S60 and WM 5.0) for prototypes of next-generation mobile Web applications. Formulated, designed and executed trials in the UK and Spain.
- Led France Télécom's multimodal domain - directing multiple programs and projects throughout R&D. Approved technical approaches and budgets for the company. Generated key technical mobile multimodal roadmaps.
- Created mobile multimodal services - for France Télécoms PageJaunes business on Sony Ericsson P900 and Orange SPV smartphones using in-network services. In street Paris consumer trials generated valuable data.
- Represented France Télécom/Orange – in the W3C. Evangelized the mobile Web Initiative (MWI) through press engagements, technical conferences and workshops. Authored the Delivery Context Client Interfaces (DCCI) candidate recommendation Contributor to the multimodal interaction framework (MMI), drove XHTML1.1, CSS2.1, ECMA-262, DOM level 2 and XMLHttpRequest into the Orange group device requirements.

- Patents: European 1 646 037 A2 speech/geography, 4 patents pending: gesture interfaces and widget management.

LifeF/X Inc., MA

1999 to 2002

Senior Technology Officer

- Architected technologies for LifeF/X's IPO in '99 as a founding member. Established the technical direction for life-like CG characters transforming the technology developed for the film industry, into a real time (30fps, 10kbps) consumer and professional products:
 - Player and FaceMail – an ActiveX Web and Office Mail (TTS+realvoice) player. Shipped 4 versions.
 - FaceXpress - audio processing and animation authoring. Shipped Feb '02.
 - *POD* - Stand-In creation from a single face image in minutes with Kodak.
- Grew the company hiring senior technical leads, engineering management and the core software team.
- Engineered the prototype from which the products were derived. Developed lip-synchronization algorithms for IBM's ViaVoice text-to-speech and AT&T Naturally Speaking products. Developed viseme/phoneme editing tools. Developed streaming technology capable of 10kbps with latencies of <1 sec in conjunction with nellymoser Inc.,
- Built a service bureau for customer data processing generating \$0.3M of revenue.
- Generated a Kodak commitment. Defined a system to semi-automatically create Stand-Ins with minimal interaction.
- Interviewed by The Learning Channel and Discovery Channel (PBS) as a visionary on the future in 2025, Oct 2001.

Compaq Computer Corporation, Cambridge Research Laboratory, Boston, MA

1998 to 1999

Senior member of the research staff. Promoted to senior member of the research staff '98.

- Invented a vision-based touch screen and the Invisible-Mouse. Transferred to Compaq's commercial portable group.
- Invented a groundbreaking Message Panel using real time sensors and A/V feedback on a Compaq Presario 5560. Created a live demonstration at Innovate 1999, Houston TX for 5000 top Compaq customers and at DECUS, RI.
- Demonstrated FaceWorks during Compaq CEO Eckhard Pfeffer's keynote at Comdex Las Vegas.

Digital Equipment Corporation, Cambridge Research Laboratory, Boston, MA

1991 to 1998

Member of the technical staff. Promoted to consulting engineer '93

- Product manager for FaceWorks a Multimedia Web client and W95/WNT authoring tool. The product mapped JPEG images onto 3D geometry coupled to real speech and facial actions. A streaming Web client delivered content via the RealNetworks SDK's (G2). Developed using COM and ActiveX. Hired and managed twelve engineers.
 - Generated business plan and technical specifications for FaceWorks the authoring tool for W95/WNT
 - Engineered the core facial animation and lip-synchronization algorithms.
 - Shipped the product through QA using MSVC++ 5.0, COM, MS Source Safe and Visual Intercept
 - Internal field trial content generated from a 30 min audio newsletter by J. Harrow with 1,000+ users
 - Garnered partnerships from ABC and OneZero Media to generate a Charlie character content for the Real Networks Developers Conference. Interviews by ABC Australia and OneZero Media (broadcast '98)
- Invented the first Smart Kiosk on 3 Alpha UNIX workstations using TCP/IP. Patented results.
- Shipped DECface product within the Digital Alpha AXP UNIX DECtalk Multimedia product suite.
- Book: *Computer Facial Animation*, A.K. Peters Ltd., ISBN-156881-018-8, pp. 450. Hardcover (sold out).
- Wrecking crew contributor for the Alpha AXP Kubota V 6/20 graphics system.
- Assisted in B. Palmer's Comdex CEO presentation by porting the facial animation code to the first Digital Alpha NT workstation. Created synthetic personas of Bob Palmer and corporate VP's.
- Productive member of the visualization research group investigating computer graphics, computer vision, physically based modeling, medical and surgical simulation. Contributed to corporate marketing events; SIGGRAPH Digital Booth in 95&96 and DECworld '93 broadcast on Channel 5 News. Developed skin tissue dynamics code on the parallel DECMP12000 system. Generated significant publications and intellectual property.
- Patents: 6 US Patents awarded: audio/visual synchronization, imaging, users and face animation (see addendum).

Schlumberger Lab for Computer Science, Austin, Texas

1988 to 1991

Member of the scientific staff. Modeling and simulation group

- Implemented scientific borehole and seismic visualizations on a Silicon Graphics 4D workstation using Iris GL.
- Developed interactive visualizations for the Formation Micro-scanner and Electromagnetic Induction borehole tools.
- Developed 3D seismic data visualization on the Connection Machine-2 system and the Silicon Graphics over a Virtual Memory Interfaces. Significantly reduced the processing time on ultra large datasets by developing parallel visualization algorithms and data slicing techniques.

IO Research Ltd., London, England. **Software engineer**, 3D computer graphics

1988

BenchMark Technologies Ltd., London, England. **Software engineer**, 3D computer graphics

1987

British Broadcasting Corporation Lime Grove, London, England. **Newsnight assistant designer**

1985

EDUCATION

Ph.D. Computer graphics: Middlesex University, London, England.

M.Phil. Transferred to Ph.D. Middlesex University, London, England.

B.A.Hons. First class in graphic design, Middlesex University, London, England.

Patents, publications, standards activities and awards: <http://www.ifacelab.com>

Addendum

Patents

1. US: 5,657,426, Method and Apparatus for Producing Audio-Visual Synthetic Speech, Waters, K. and Levergood, T. Issued Aug 12th 1997.
2. US: 5,884,267, Automated Speech Alignment for Continuous Natural Speech Goldenthal, B., Van Thong, J-M. and Waters, K. Issued Mar 16th 1999.
3. US: 5,936,615, Image-Based Touch Screen, Waters, K. Issued Jul 10th 1999.
4. US: 6,016,148, Automated Mapping of Facial Images to Animation Wireframe Topology, Kang, S., Waters, K. Issued Jan 18th 2000.
5. US: 6,031,539, Facial Image Method and Apparatus for Semi- Automatic Mapping a Face onto a Wireframe Topology, Kang, S. and Waters, K. Issued Feb 29th 2000.
6. US: 6,052,132, Technique for Providing a Computer Generated Face Having Coordinated Eye and Head Movement, Christian, A., Avery, B., and Waters, K. Issued Apr 18th 2000.
7. US: 6,256,046, Method and Apparatus for Visual Sensing of Humans for Active Public Interfaces, Waters, K., Loughlin, M., Rehg, J. and Kang, Issued Jul 3rd 2001.
8. EP: 1 646 037 A2, Method and Apparatus for Enhancing Speech Recognition Accuracy by Using Geographic Data to Filter a Set of Words. Waters, K. Benoit, S. Issued: April 4th 2009.
9. EP Patent pending: Gesture Driven Mobile Browsing, Waters, K., Lassey, B., Zakielarz, P. and Williams C. 2006.
10. EP Patent pending: A System and Method for Managing Widgets, Waters, K. and Rosenblatt, K. Filed: Nov 14th 2008.
11. EP Patent pending: A Method and Apparatus for Navigating Web User Interfaces on Mobile Devices Using Clutch-Tilt and Clutch-Snap Gestures, Waters, K. Sierra, M. Tucker, J. Filed: May 2nd 2009.

Standards Service

- A Next Generation Delivery Context Interface, Waters, K., and Rosenblatt, K. W3C International Workshop on Distributed Web Applications, Dublin, Ireland, June 5-6, 2007.
- Delivery Context: Client Interfaces (DCCI) 1.0 Accessing Static and Dynamic Delivery Context Properties. W3C Candidate Recommendation, Dec 2007.
- A Device Description Repository: An Integrated Operator's Perspective, K. Waters et, al. W3C International Workshop on the Implementation of a Device Description Repository, Madrid, Spain, July 12 2006.
- Mobile Web Initiative Event: Mobile Web Challenges and Potential, London, UK, Nov 15 2005.
- W3C Mobile Web Initiative Towards an Integrated Operator: A mobile perspective, Nov 11, 2004.
- Delivery Context Interfaces: DCI: Accessing Static and Dynamic Properties. W3C Candidate Recommendation, Nov 2006.
- W3C Multimodal Interaction Framework, W3C Note, May, 2003.

Recent Invited Presentations

- Mobile Internet World 08: Mobile Content and Entertainment, Oct 20 2008.
- International Wireless Consortium IWPC: Green Devices and Accessories, Sept 2008.
- Mobile Mondays: Browsers - Driving the Web or Driven by the Web? June 2008.
- Mobile Internet World 07: How the Mobile Internet will Change Your Life. Nov 2007.

Books

- Computer Facial Animation, second edition, Fred I. Parke and Keith Waters. A.K. Peters Ltd., Boston Massachusetts, ISBN 1978-1-56881-448-3 Hardcover, pp. 454, 2008.
- Computer Facial Animation, Fred I. Parke and Keith Waters. A.K. Peters Ltd., Boston Massachusetts, ISBN 1-56881-014-8 Hardcover, pp. 450, 1996 (sold out).

Book Chapters

- Waters, K. Simplifying the Multimodal Mobile User Interface, Stan Kurkovsky (ed), IDG Publications, due 2009.
- Waters, K., Rehg, J., Loughlin, M. and Kang, S. Computer Vision for Human-Machine Interaction, Roberto, C, and Pentland, A (eds.), Cambridge University Press, pages 83-96, 1998.
- Waters, K. Synthetic Muscular Contraction on Facial Tissue Derived from Computerized Tomography Data, Taylor, R., Lavallee, S., Burdea, G. and Moges, R. eds., MIT Press, Cambridge Massachusetts, pages 191-199, 1996.
- Waters, K. Modeling Three-Dimensional Facial Expressions, Processing Images of Faces, Bruce and Burton (eds.), Ablex, New Jersey, pages 202-227, 1992.

Journal Articles

- Parise, S., Kiesler, S., Sproull, L., and Waters, K. Cooperating with life-like interfaces. *Computers in Human Behavior*, 15, 123-142, 1999.
- Yuencheng, L., Terzopoulos, D. and Waters, K. Realistic Modeling for Facial Animation, In *Computer Graphics (SIGGRAPH 1997)*, pp. 55-62, 1995.
- Waters, K. and Levergood, T. DECface: A System for Synthetic Face Applications, *Multi-media Tools and Applications*, Vol. 1, No. 4, pp. 349-366, Nov 1985.
- Kiesler, S., Sproull, L. and Waters, K. A Prisoner's Dilemma Experiment on Cooperation With People and Human-Like Computers. *Journal of Personality and Social Psychology*. Vol. 70, No 1, 47-65, 1996.
- Terzopoulos, D. and Waters, K. Analysis and Synthesis of Facial Image Sequences Using Physical and Anatomical Models, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, pp. 569-579, Vol. 15, No. 6, June 1993.
- Waters, K. and Terzopoulos, D. The Computer Synthesis of Expressive Faces, *Philosophical Transactions of the Royal Society London [B]*, Vol. 335, No.1273, pp. 87-93, January 1992.
- Waters, K and Terzopoulos, D. Modeling and Animating Faces using Scanned Data, *The Journal of Visualization and Computer Animation*, Vol. 2, No.4, pp. 123-128, December 1991.
- Carlbom, I. et al., Modeling and Analysis of Empirical Data in Collaborative Environments, *Communications of the ACM*. Vol. 35, No. 6, pp. 74-84, June 1992.
- Terzopoulos, D., and Waters, K. Physically-Based Facial Modeling, Analysis, and Animation, *The Journal of Visualization and Computer Animation*, Vol. 1, pp. 73-80, December 1990.
- Waters, K. A Muscle Model for Animating Three-Dimensional Faces, (*SIGGRAPH 87*) *Computer Graphics*, Vol. 21, No. 4, pp. 17-24, July 1987.

Refereed Conference Presentations

- Dariush, B., Kang, S.B., and Waters, K. Spatiotemporal Analysis of Face Profiles: Detection, Segmentation, and Registration, *Proc 3rd International Conf on Face and Gesture Recognition*, Japan, pp. 248-253, April 1998.
- Goldenthal, G., Waters, K. Van Thong, J-M., and Glickman, O. Driving Synthetic Mouth
- Gestures: Phonetic Recognition for FaceMe! *Proceedings of Fifth European Conference on Speech Communication and Technology (Euro Speech)*, Vol. 4, pages 1995-1998, September 1997.
- Waters, K. and Frisbee, J. A Coordinated Muscle Model for Speech Animation, *Graphics Interface 1995*, Canadian Human-Computer Communications Society, pp. 163-170, Ontario, Canada, May 1995.
- Sproull, L., Subramani, M., Kiesler, S., Walker, J., and Waters, K. When the Interface Is a Face, *Cambridge University Press, Human Values and the Design of Computer Technology*, ed., B. Friedman, pp. 163-185, 1997.
- Waters, K. and Levergood, T. An Automatic Lip-Synchronization Algorithm for Synthetic Faces, *ACM Multimedia*, San Francisco, pp. 149-156, October 1994.
- Lee, Y., Terzopoulos, D., and Waters, K. Constructing Physics-Based Facial model of Individuals, *Graphics Interface 1993*, Canadian Human-Computer Communications Society, pp. 1-8, May 1993.
- Terzopoulos, D. and Waters, K. Analysis of Facial Images using Physically-Based and Anatomical Models, *Proceedings IEEE Computer Vision*, Japan, pp. 727-732, May 1990.

- Waters, K. A Physical Model of Facial Tissue and Muscle Articulation Derived from Computer Tomography Data, Proceedings of the Second Conference Visualization in Biomedical Computing, Chapel Hill, N. Carolina, SPIE, Vol. 1808, pp. 574-583, October 1992.
- Waters, K. and Terzopoulos, D. A Physical Model of Facial Tissue and Muscle Articulation, Proceedings of the First Conference of Visualization in Biomedical Computing, Atlanta, Georgia, pp. 77-82, May 1990.

Technical Reports

- Waters, K., Tucker, J., Sierra, M., et. al., Web Rendering for Orange Devices, Orange Labs, Reports and White Paper, May 21 2009.

Other Publications

- Waters, K., Ondet, O., Goumount, R., and Fodor, S., Browsing: Towards an Integrated Operator, White Paper, August 4 2005.
- Guillaume, G., Morvan, A., Mitukiewicz, E., Waters, K., and Lucas, P., The Integrated Operator: A Mobile Perspective, Mobile Web Initiative, November 2004.
- Waters, K. and Levergood, T. DECface: An automatic Lip-Synchronization Algorithm for Synthetic Faces, CRL Technical Report 93/4, September 1994.
- Terzopoulos, D. and Waters, K. An Algorithm for Reconstructing Faulted Subsurfaces from Scattered Data, In Proceedings of the 4th Schlumberger Software Conference, Vol. 2, pp. 245-250, March 1990.
- Waters, K. and Wang, S. A 3D Interactive Physically-Based Micro-World, SPIE Symposium on Electronic Imaging Science and Technology, pp. 91-98, February 1990.
- Waters, K. and Terzopoulos, D. Interactive Visualization of 3D Geophysical Data on a Graphics Super workstation, In Proc of the 4th Schlumberger Software Conference, Vol. 2, pp. 229-333, March 1990.
- Celniker, G., Chakravarty, I., Highnam, P., Waters, K. and Anderson, B. An Interactive 3D Graphical Computing Environment for Electromagnetic Tool Modeling and Log Interpretation, Research Note, SDR EMG-002, August 5, 1991.
- Waters, K. Animating Human Heads, Proceedings of Computer Graphics, Online Publications, pp. 89-97, September 1987.

Selected List of Invited Presentations

ATR: 6th Symposium on Face and Object Recognition, Japan, July 1999.
AT&T Seminar Series: Computer Facial Animation, November 1998.
MPEG4 meeting: Very Low Bit-Rate Coding (VLBC), University of Illinois Urbana: High Fidelity Facial Animation, October 1998.
Life-Like Computer Characters: Snowbird, Utah, October 1994.
NSF Workshop: Computer Generated Faces, Upenn, April 1994.
MIT AI Lab: September 1994.
MIT Computer Vision Lab: Feb 1994.
MIT Sensory Communication Lab: September 1993.
Harvard Robotics Lab: November 1993.
Dept of Radiology University of Pennsylvania, March 1993.
Dept of Radiology University of Washington: Physically-Based Modeling for Facial Synthesis and Analysis, 1993.
CSERIAC: Crew System Ergonomic Information Analysis Center, March 1992.
Royal Society: Discussion Meeting: Processing the Facial Image, London UK, July 1991.
SIGGRAPH Panel: Facial Animation: Past, Present and Future, 1997.
SIGGRAPH Panel: Virtually Invented People, July '01.
SIGGRAPH Course 2: Computer Vision for Computer Graphics, Florida, 1994.
SIGGRAPH Course 22: State of the Art in Facial Animation, Dallas, July 1990.
SIGGRAPH Course 26: State of the Art in Facial Animation, Boston, July 1989.
Imagina'95: DECface: A Lip-Synchronization Algorithm for Synthetic Faces, Monte Carlo, France, February 1995.

Imagina'88: 3D Facial Animation, Monte Carlo, France, February 1988.

Imagina'87: 3D Computer Generated Faces, Monte Carlo, France, February 1987.

Professional Activities and Service

NSF Research grant proposal review committee, Sept 1999.

Ph.D. supervision for Joe Frisbee RLE labs MIT.

Ph.D. supervision for Rebecca Hwa, Harvard Computer Science Dept.

Area Editor for Graphical Modeling and Image Processing Academic Press. Editorial board for the Journal of Visualization and Animation, John Wiley and Sons, UK.

Program committee ICSC'95 Image Analysis Applications and Computer Graphics, Hong Kong.

Teaching

Middlesex University 1985-1987: Research Assistant Lecturer, London, England. Taught the undergraduate BA Art and Design students on the fundamentals of two and three-dimensional Computer Graphics using PICASSO and Prism Fortran software. Lectures and tutorials for the MA Computing in Design course. Lectures on the internal and external retraining courses including the introduction and advanced courses in Computer Graphics. Individual lectures at Gloucestershire Graphic Design Department, South Glamorgan Institute, and Harrow College.

Awards

1988: Grand Prix Parigraph Research Category, Paris.

1988: Third Place Graduate, National Computer Graphics Association, USA.

1986: Supreme Award Winner, Computer Animation Film Festival, London.

1986: Student Award Winner, Computer Animation Film Festival, London.

1985: Thames Television Bursary to the USA.

1985: First Place Calcomp International Art Award LA, USA.

Exhibitions, TV Broadcasts and News

2001 Broadcast: PBS, The future in 2025, The Learning Channel & Discovery Channel.

1998 Article: Computer Graphics World, Facial animation head on.

1998 Broadcast: Australian Broadcasting Corporation (ABC) The Face Quantum.

1998 Broadcast: Australian Broadcasting Corporation (ABC) Broadcast, Synthespians, Media The Wild Wild Web.

1995 Article: Washington Post June 1:User-Friendly?

1994 Article: The New York Times: Science Section June 28: Japanese Put a Human Face on Computers.

1993 Exhibit: The Human Body, Centre Georges Pompidou, France.

1992 Broadcast: BBC2, Antenna, UK.

1991 Broadcast: BBC2, The Human Face, UK.

1988 Exhibit: Les Chemins du Virtuel, Centre Georges Pompidou, France.

1988 Broadcast: European television center, Ondes de Choc, Metropole, France.

1988 Broadcast: BBC2 Welcome to my world, UK.

1987 Broadcast Belgian Television, Charbon Velliers.

1987 Broadcast: BRTV Germany, Computertreff.

1986/87 Broadcast: BBC2, Micro-Live, UK.

1986 Exhibit: Art, Science, and Industry, Imperial College, London.

1986 Exhibit: Thames Television Bursary Exhibition, London.

1985 Exhibit: Electronic Paintbrush, Museum of Science and Industry, LA USA.

1984 Broadcast: BBC2 Debut, UK.

1984 Broadcast: Television Francaise TF1, Eiffel Tower France.