MIKE PERKINS, PH.D.

perk@cardinalpeak.com

SUMMARY

More than 28 years of experience in research, algorithm development, system design, engineering management, executive management, and Board of Directors membership. Also skilled in technical sales, customer relations, writing, and presentations. Possess valuable small business experience through the founding of three companies.

PROFESSIONAL EXPERIENCE

Cardinal Peak, LLC *Co-founder* Feb 2002 to Present
Lafayette, CO

Managing Partner

Cardinal Peak is a specialized contract engineering firm that assists companies in bringing embedded products to market quickly and with very high certainty. We offer consulting, contract engineering and expert witness services, with special expertise in building embedded products relating to video, signal processing and mobile applications.

Responsibilities include technical consulting, software development, management of contract engineering projects, and management of day-to-day operations.

Colorado School of Mines Aug 2002 to 2004
Golden, CO

Adjunct Professor

Teach classes for the engineering department as needed in the areas of communications, linear systems, and signal processing.

Vantum Corporation *Co-founder* Sept 1999 to Feb 2002
Boulder, CO

VP Engineering

Built and led engineering team responsible for the development of Vantum's products. Products included a programmable video appliance for compressing, storing, and streaming MPEG video over IP networks; a software development tool for writing JavaScript programs for the video appliance; various software utilities to support deployed networks of video appliances.

DiviCom, Inc. *Co-Founder* May 1993 to Sept 1999
Milpitas, CA

Engineering Director, Headend Data Systems

Built and led engineering team responsible for the development of DiviCom's data systems products. Products comprised a headend data termination system (Ethernet interface, IP routing, QPSK modulation and demodulation, broadband MAC protocol); an Ethernet / IP to MPEG-2 transport stream encapsulator and router; and a general purpose PC-based MPEG-2 manipulation toolkit.

Engineering Director (previously manager), Video Quality and Algorithm Development:

Built and led engineering team responsible for developing video processing and encoding algorithms, including rate control, statistical multiplexing, ATM traffic shaping, and network de-jittering. Responsibilities included managing the development of the encoder boards in DiviCom's mainstream encoder products. Served as DiviCom's principal representative to the MPEG-2 committee and to the ATM Forum for 1 ½ years, authoring numerous contributions.

Scientific Atlanta, Inc. Aug 1991 to May 1993
Norcross, GA

Staff Engineer

Responsible for SA's efforts in the area of video compression algorithm development. Responsibilities included: serving as SA's principal delegate to the MPEG committee; simulations of MPEG and VQ video encoding algorithms; collaboration and liaison with the Utah State University team contracted to develop a real-time VQ encoder; frequent presentations to top executives of SA and its customers on compression technologies and strategies.

The German Aerospace Research Establishment: Oct 1988 to Aug 1991
Institute for Communications Technology,
Department of Communications Theory
Oberpfaffenhofen, Germany

Research Scientist

Performed research in the area of combined source-channel coding. Techniques investigated include joint quantizer/signal-constellation design, DCT image coding coupled with various error-control techniques, combined tree-structured quantization and channel coding, soft-decision decoding of block codes, and channel coding for source coders that use Huffman coding.

Stanford University 1983 to 1988
Stanford, CA

Post Doctoral Fellow (3-88 to 7-88)

Subband coding of images using psychophysically justified bit allocations.

Stanford University 1983 to 1988
Stanford, CA

Research Assistant (9-84 to 3-88)

Provided analysis and simulation support for the development of an A/D converter that flew as part of a space shuttle experiment. Performed thesis research in the area of data compression of stereopairs

Hughes Aircraft Corporation Summer 1983 and 1984
El Segundo, CA

Member of Technical Staff

Simulated FDMA communication systems. Modified and verified the accuracy of test procedures for the space shuttle Ku-band communication system; automated the test procedures through software control of the instrumentation.

EDUCATION

Stanford University

Ph.D. Electrical Engineering, March 1988
MS Statistics, December 1986
MS Electrical Engineering, March 1984

University of Kansas

BS Electrical Engineering, May 1983

PATENTS

Granted

5,420,639 M. Perkins Rate-adaptive Huffman coding,"

5,717,464 M. Perkins, D. Arnstein, "Rate control for a video encoder"

5,920,572 E. Washington, M. Perkins, et. al., "Transport tream decoder/demultiplexer for hierarchically organized audio-video Streams"

5,828,414 M. Perkins, T. Lookabaugh, "Reduction of timing jitter in audio-video transport streams"

5,859,660 M. Perkins, W. Helms, "Non-seamless splicing of audio-video transport streams"

5,861,919 M. Perkins, D. Arnstein, "Dynamic Rate Optimization for an Ensemble of Video Encoders"

6,188,729 M. Perkins, "Method and apparatus for effecting seamless data rate changes in a video compression system"

Pending

09/678,067 M. Osminer, M. Perkins, et. al., “Method and system for detecting motion in a sequence of temporally compressed pictures captured from a moving image capture device”

09/678,696 M. Osminer, M. Perkins, et. al., “Method and system for detecting motion in a sequence of temporally compressed pictures captured from a fixed position image capture device”

09/678,697 M. Osminer, M. Perkins, et. al., “Method and system for adapting the apparnet picture rate in a sequence of temporally compressed pictures in response to detecting motion”

PUBLICATIONS

Journals

M. Perkins and D. Arnstein, “Statistical Multiplexing of Multiple MPEG-2 Video Programs in a Single Channel,” SMPTE Journal, Vol. 104, No. 9, September 1995

M. Perkins, “Data Compression of Stereopairs,” IEEE Transactions on Communications, Vol. 40, No. 4, April 1992

T. Lookabaugh and M. Perkins, “Application of the Princen-Bradley Filter Bank to Speech and Image Compression,” IEEE Transactions on Acoustics, Speech, and Signal Processing, Vol 38, No. 11, Nov. 1990

M. Perkins, “A Comparison of the Hartley, Cas-Cas, Fourier, and Discrete Cosine Transforms for Image Coding,” IEEE Transactions on Communications, Vol. 36, No. 6, June, 1988

M. Perkins, “A Separable Hartley-Like Transform in Two or More Dimensions,” Proceedings of the IEEE, Vol. 75, No. 8, August, 1987

Conference Proceedings

J. Zhang and M. Perkins, “Effects of ATM Transmission Errors on MPEG-2 Quality of Service,” SMPTE Conference, 1995?

M. Perkins and E. Offer, “Combined Source-Channel Image Coding Using Tree-Structured Vector Quantization and Sequential Decoding,” International Conference on Communications, (ICC), June, 1991

E. Offer and M. Perkins, “Soft-Decision Decoding of Block Codes Using the Stack Algorithm,” International Conference on Communications (ICC), June, 1991

M. Perkins and T. Lookabaugh, “Combined Source-Channel DCT Image Coding for the Gaussian Channel,” Proceedings of the European Signal Processing Conference (Eusipco), September, 1990

T. Woerz and M. Perkins, “Improving the Performance of a Low-Rate Image Coder Connected to a Noisy Gaussian Channel,” Proceedings of the European Signal Processing Conference (Eusipco), September, 1990

Conference Proceedings

M. Perkins, “Joint Vector Quantization and Signal Constellation Design for the Gaussian Channel,” International Symposium on Information Theory, January, 1990

M. Perkins, “Optimizing Signal Constellations for the Output of a Quantizer,” Proceedings of IEEE Global Telecommunications Conference (Globecom), November, 1989

M. Perkins and T. Lookabaugh, “A Psychophysically Justified Bit Allocation Algorithm for Subband Image Coding Systems,” Proceedings of International Conference on Acoustics Speech and Signal Processing (ICASSP), May, 1989

T. Lookabaugh, M. Perkins, and C. Cadwell, “Analysis/Synthesis Systems in the Presence of Quantization,” Proceedings of International Conference on Acoustics Speech and Signal Processing (ICASSP), May, 1989

Miscellaneous

M. Perkins, “Unlocking the True Broadband Potential of Cable Networks,” IBC Daily News, Sept. 12, 1998

M. Perkins, “Digital Video and Data,” International Cable, May, 1998

M. Perkins, “Data Compression of Stereopairs,” Stanford University Ph.D Dissertation, February, 1988