NEIL MAMMEN

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INNOVATOR, ARCHITECT, HW ENGINEER & TEAM MOTIVATOR WHO BRINGS DIVERSE TEAMS AND TALENTS TOGETHER TO DELIVER RESULTS

Customer focused Technologist, System, PC Board, Chip, FPGA Architect

Evangelist and VC fundraiser

- As CTO helped raise over $70M in VC and Investment Funding for NUKO Information Systems
- Co-founded and raised $15M VC funding for startup Propulsion Networks
- Co-founded and helped raise $3M VC funding for startup Bay Microsystems

End to end HW execution

- Went from white board drawings to functioning Apollo 6000 nit Dolby Vision® proof of concept monitor including PCB Design, layout fab and assembly and debug in 8 weeks.

Vendor Relationships

- Long term experience and relationships with manufacturing and assembly facilities for Lean Startup quick turn boards in US, and medium turn & full production in China.

Innovator

- Over 18 Patents (granted or pending) in various fields (Intel, Dolby, Luminous, Broadcom etc.).

ACCOMPLISHMENTS

Managed team of over 40 Engineers, Technicians and staff as CTO and VP of Engineering to deliver complete end to end video products, including creating and managing documentation and library systems.

Personally designed every one of Dolby Laboratories Dolby Vision® HDR Monitors.

Joined Dolby at their request to deliver fully functional HDR monitor demo to CES in 10 weeks. Internal group wanted 7 months to architect, design and have a PCB ready for CES with their team of 8. Single handedly delivered working system 2 weeks ahead of CES.

Experienced High Density and high-speed FPGA Architecture and Verilog & Board Design including ASIC Verification using Altera and Xilinx with high speed Serdes

Co-designed, Product Planned and Specified the world's first ever MP2 player chip.

Led Samsung and Panasonic design teams to implement their first ever MPEG players.

Designed some of the first MPEG 1 & 2 Set Top Boxes in the Industry.

Created initial product requirements & specs of the iCompression MPEG2 codec chip. The world's first single chip Audio/Video Data Encoder and TS Mux chip. Located engineers to be the founders and seeded iCompression through NUKO Information Systems. *iCompression sold for $500M to Globespan.*

Called in for Emergency Consulting. Single handedly re-architected, re-designed, implemented and debugged and reliability tested in 6 weeks, a complete Backplane Proprietary IP Packet MAC in a space & speed limited FPGA for Metro Area Network (MAN) and Resilient Packet Ring (RPR) implementation. Allowed company to demo on schedule. Allowed company to ship MAN products ahead of any other company.

Within 2 weeks of joining, was asked to salvage an important contract with Philips that was going to be cancelled because C-Cube's world's first MPEG Decoder Chip had a bug that could not be found. Went through VLSI design files to discover and design a work around for an interface flaw in the, at the time sole

income providing, chip that 2 previous applications engineers and the chip's own design engineer had spent 4 months trying to find. Fixing this problem saved project with Philips.

In 4 months started up and established a fully functional applications group to support new SPARC RISC chipset, (SparKIT). As manager, recruited and trained 9 engineers. Developed evaluation boards for customer training and chip debug, installed Customer Hotline, databases, started FAE magazine, FAEdback, etc. COMDEX shows, developed and produced customer training seminars around the world. Brought the world's first 21 Customer SPARCstation Clones to market

Engineered the world's first digitized Video Transmission over Fiber
Designed the world's first MPEG over DS2/D23/SONET transmission
Designed the world's first MPEG over ATM over ADSL transmission

PROFESSIONAL EXPERIENCE

Tentmaker Systems Consulting Group, San Jose, CA **2018-**
Chief Technology Officer

- T3, Dolby Labs, Light Field Labs, Ambient Scientific etc

Dolby Labs, Sunnyvale, CA **2008-2018**
Senior Staff Engineer

- HW architect and designer for every Dolby Vision HDR monitor and AR/VR design made by Dolby. **Allowed HDR and Dolby Vision to become a major accepted Technology world over**
- Designed the very first Quantum Dot Display monitor for Dolby. This allowed QD Monitors to become standardized.
- Author and co-author of 5 Dolby Patents. Helped Ensure Dolby's continued technology leadership and licensing portfolio

Tentmaker Systems Consulting Group, San Jose, CA **2002-2008**
Chief Technologist

Responsible for Sales, International coordination, Architecture, Project management and Customer Satisfaction

- Developed sales to $1.6M in consulting revenues per year
- Local team of 4, India team of 8.
- Customers included Xilinx, JDSU, Brilliant, nVidia, Netlogic Microsystems, Mentor Graphics, Reliancy, BBNC, Stream Processors, Philips Semiconductor (various groups within Philips)/NXP, WIS Technologies (various fill in roles within WIS), DataRobotics, Audience, Varian Medical Systems.

Propulsion Networks, Campbell, CA **2001-2002**
Co-Founder, Chief Architect and VP of Technology

- Raised $15M in VC Funding
- Recruited 18 engineers
- Conceived, Proposed, Defined and Architected a Metro/Core Router 40G/10G Network Processor ASIC.
- All schedules met. Fully functional gate level C-Model demonstrated. Received lots of customer enthusiasm and validation. Applied for 16 patents (currently owned by Intel). The VC's opted to close down the company & sell off the IP when they realized our product was 10 years too early.

Luminous Networks, Cupertino, CA **1999-2001**
Principal Architect, Office of the CTO Was consulting, joined at the insistence of the CTO & CEO
Responsible for re-architecture and re-design (Verilog) of the LMAC. Core MAC unit for the RPR.
Director, ASIC Design
Requested by the CEO to take over the ASIC group responsible for the ASIC version of the LMAC. Did so till was able to hire my own replacement. Took the design to a fully functional Simulation.

- Co-author of 3 Luminous patents

- Left to start Propulsion Networks per prior agreement with CTO & CEO.

Bay Micro Systems, San Jose, CA **1998-1999**
Co-founder with Rick Blezynski
- Raised first round $3M in Venture Funding through my personal VC contacts. BMI is still in operation today.

NUKO Information Systems, San Jose, CA **1994-1998**
Chief Technology Officer & VP of Engineering
Chief Technology Officer
Chief Technologist
Director of Engineering
- Raised $70M in funding based on my architecture
- Pioneered the first MPEG Video Transmission over Phone Lines using PacBell's DS2/DS3 networks.
- Architected the first MPEG over ATM over DSL transmission systems.

ADDITIONAL PROFESSIONAL EXPERIENCE

C-Cube Microsystems, Milpitas, CA
Manager, System Design and Applications

LSI Logic, Milpitas, CA
Senior Staff Member, Applications, DSP Division.
Manager, SPARC Applications Engineering, SPARC Division

Advanced Micro Devices, Sunnyvale, CA
Sr. Product Planning & Applications Strategic Development Engr, High Speed Serial & Optical Networking Development Group.
Product Engineer, Microprocessors Division.

UC Berkeley Extension
Instructor

EDUCATION

Master of Science Electrical Engineering (**MSEE)**, Computer Engineering and Solid-State Physics, Oregon State University
Bachelor of Science Electrical Engineering (BSEE), Electrical Engineering and Computer Engineering, Oregon State University

SOCIETIES AND AWARDS

- 6-time winner of Dolby Idea Quest Awards (for Innovation) in 9 years, a number went on to become products.
- Wyle / EE Times American By Design Contest, 1st Place Design Winner for Digital Devices.
- NUKO Employee elected Summit Award Winner (2 time)
- Wyle / EE Times Idea Quest Grand Prize Winner. Winner of Saturn EV1 Electric Vehicle.
- President, Tau Beta Pi OR Alpha Chapter, Engineering Honor Society
- Eta Kappa Nu, Electrical Engineering Honor Society
- Chairman, IEEE Student Organization, OSU
- 2x Teaching Assistant of the Year Award, Engineering Dept, OSU (by Student Vote)

SERVICE ACTIVITIES

- MOD Night - Coordinate and manage an extracurricular activity involving over 120 volunteers and over 480 Junior High students in one / two night "Outward Bound" style Night Game Ministry activity spread out around the Santa Cruz, CA and Portland, OR mountains. (Prior to 2001).
- Regularly fly around US and occasionally other countries to teach and train Churches in Apologetics.

Partial list of Patents (applied, pending or granted)

Systems and Methods for Display Systems Having Improved Power Profiles

Publication number: 20140307011

Abstract: Techniques are provided to provide various pulse width modulation (PWM) schemes to embodiments of dual modulator display systems that may comprise a backlight of individually addressable and controllable light emitters. The backlight provides illumination to a light modulator for further conditioning of the light to be presented to a viewer. The backlight may be striped and each stripe is assigned a PWM scheme that effectively increases the bit depth of the controller for each stripe. The display system may allow a better matching of PWM periods to LCD frame rates to reduce visual artifacts. In another embodiment, the display system may detect a small bright feature to be rendered in the image data and, with a pre-assignment of light emitters to different partitions, the backlight controller may drive a subset of the light emitters according to the partitions.

Type: Application

Filed: November 7, 2012

Publication date: October 16, 2014

Applicant: DOLBY LABORATORIES LICENSING CORPORATION

Inventors: Ajit Ninan, Qifan Huang, Greg Maturi, Neil Mammen, James Kronrod

Variable flower display backlight system

Patent number: 8836736

Abstract: Techniques for using variable flower assemblies to control light leakage between designated portions of light-emitting elements are provided. In some embodiments, a variable flower assembly (100) comprises a plurality of light-transmissive segments (102-1, 102-2, . . . , 102-6) each may be electronically set to a different light-transparency level. The variable flower assembly substantially forms a tube around a light-emitting element (104) mounted on a first plane. A first edge of each of the light-transmissive segments collectively surrounds the light-emitting element on a second plane substantially parallel to the first plane. A second opposing edge of each of the light-transmissive segments collectively forms an opening of the tube. In some embodiments, a reflective assembly (120) which reflectance level is electronically controllable may surround the variable flower assembly.

Type: Grant

Filed: October 13, 2010

Date of Patent: September 16, 2014

Assignee: Dolby Laboratories Licensing Corporation

Inventors: Neil Mammen, Ashley Penna, Ajit Ninan

Method and apparatus for using multiple network processors to achieve higher performance networking applications

Patent number: 7606248

Abstract: An apparatus is described having a plurality of network processors that identify, for each of a plurality of packets, which multidimensional queue from amongst a plurality of multidimensional queues that each one of the plurality of packets should be enqueued into. Each of the network processors is able to identify a particular multidimensional queue for a different one of the plurality of packets.

Type: Grant

Filed: May 10, 2002

Date of Patent: October 20, 2009

Assignee: Altera Corporation

Inventors: Greg Maturi, Neil Mammen, Sagar Edara, Mammen Thomas

Method of policing network traffic

Patent number: 7593334

Abstract: According to one embodiment, a method of regulating traffic at a network hardware machine is disclosed. The method includes receiving a data packet, calculating a time stamp difference value, determining whether a maximum token bucket value has been exceeded by the time stamp difference value and determining whether there are enough tokens to transmit the packet.

Type: Grant

Filed: May 20, 2002

Date of Patent: September 22, 2009

Assignee: Altera Corporation

Inventors: Neil Mammen, Sanjay Agarwal

Apparatus and method for queuing flow management between input, intermediate and output queues

Patent number: 7339943

Abstract: An apparatus is described that includes a plurality of queuing paths. Each of the queuing paths further comprises an input queue, an intermediate queue and an output queue. The input queue has an output coupled to an input of the intermediate queue and the input of the output queue. The intermediate queue has an output coupled to the input of the output queue. The intermediate queue receives data units from the input queue if a state of the input queue has reached a threshold. The output queue receives data units from the intermediate queue if the intermediate queue has data units. The output queue receives data units from the input queue if the intermediate queue does not have data units.

Type: Grant

Filed: May 10, 2002

Date of Patent: March 4, 2008

Assignee: Altera Corporation

Inventors: Neil Mammen, Greg Maturi, Mammen Thomas

Mechanism for distributing statistics across multiple elements

Patent number: 7336669

Abstract: According to one embodiment, a network is disclosed. The network includes a source device, a networking hardware machine coupled to the source device, and a destination device coupled to the networking hardware machine. The networking hardware machine receives data packets from the source device and distributes statistics data corresponding to the data packets among multiple internal memory devices.

Type: Grant

Filed: May 20, 2002

Date of Patent: February 26, 2008

Assignee: Altera Corporation

Inventors: Neil Mammen, Sagar Edara, Mammen Thomas, Greg Maturi

ADAPTING VIDEO IMAGES FOR WEARABLE DEVICES

Publication number: 20180295352

Abstract: A spatial direction of a wearable device that represents an actual viewing direction of the wearable device is determined. The spatial direction of the wearable device is used to select, from a multi-view image comprising single-view images, a set of single-view images. A display image is caused to be rendered on a device display of the wearable device. The display image represents a single-view image as viewed from the actual viewing direction of the wearable device. The display image is constructed based on the spatial direction of the wearable device and the set of single-view images.

Type: Application

Filed: April 10, 2018

Publication date: October 11, 2018

Applicant: Dolby Laboratories Licensing Corporation

Inventors: Ajit NINAN, Neil Mammen

Passive Multi-Wearable-Devices Tracking

Publication number: 20180293752

Abstract: At a first time point, a first light capturing device at a first spatial location in a three-dimensional (3D) space captures first light rays from light sources located at designated spatial locations on a viewer device in the 3D space. At the first time point, a second light capturing device at a second spatial location in the 3D space captures second light rays from the light sources located at the designated spatial locations on the viewer device in the 3D space. Based on the first light rays captured by the first light capturing device and the second light rays captured by the second light capturing device, at least one of a spatial position and a spatial direction, at the first time point, of the viewer device is determined.

Type: Application

Filed: April 10, 2018

Publication date: October 11, 2018

Applicant: Dolby Laboratories Licensing Corporation

Inventors: Ajit NINAN, Neil MAMMEN

AUGMENTED 3D ENTERTAINMENT SYSTEMS

Publication number: 20180295351

Abstract: A wearable device comprises a left view optical stack for a viewer to view left view cinema display images rendered on a cinema display and a right view optical stack for the viewer to view right view cinema display images rendered on the cinema display. The left view cinema display images and the right view cinema display images form stereoscopic cinema images. The wearable device further comprises a left view imager that renders left view device display images, to the viewer, on a device display, and a right view imager that renders right view device display images, to the viewer, on the device display. The left view device display images and the right view device display images form stereoscopic device images complementary to the stereoscopic cinema images.

Type: Application

Filed: April 4, 2018

Publication date: October 11, 2018

Applicant: Dolby Laboratories Licensing Corporation

Inventors: Ajit NINAN, Neil MAMMEN

Method and apparatus for packet segmentation, enqueuing and queue servicing for multiple network processor architecture

Patent number: 7320037

Abstract: A method is described that forms different pieces of a packet and sends each one of the pieces toward a different memory unit amongst a plurality of memory units. Each one of the memory units is managed by a different network processor. The method also receives each of the different pieces, each of the pieces having been read from its respective memory unit of the plurality of memory units.

Type: Grant

Filed: May 10, 2002

Date of Patent: January 15, 2008

Assignee: Altera Corporation

Inventors: Greg Maturi, Sager Edara, Neil Mammen

Packet classification method

Patent number: 7277437

Abstract: According to one embodiment, a network hardware machine is disclosed. The network hardware machine includes a central processing unit (CPU) that processes data packets received at the network hardware machine, and a classifier, coupled to the CPU, that classifies the packets prior to the packets being received at the CPU.

Type: Grant

Filed: May 20, 2002

Date of Patent: October 2, 2007

Assignee: Altera Corporation

Inventors: Neil Mammen, Mammen Thomas, Sanjay Agarwal, M. Varghese Ninan

Method and apparatus for a network processor having an architecture that supports burst writes and/or reads

Patent number: 7206857

Abstract: A method is described that involves recognizing that an input queue state has reached a buffer's worth of information. The method also involves generating a first request to read a buffer's worth of information from an input RAM that implements the input queue. The method further involves recognizing that an output queue has room to receive information and that an intermediate queue that provides information to the output queue does not have information waiting to be forwarded to the output queue. The method also involves generating a second request to read information from the input RAM so that at least a portion of the room can be filled. The method also involves granting one of the first and second requests.

Type: Grant

Filed: May 10, 2002

Date of Patent: April 17, 2007

Assignee: Altera Corporation

Inventors: Neil Mammen, Greg Maturi, Mammen Thomas

Detecting bit errors in a communications system

Patent number: 6983403

Abstract: Error codes output from a serializer/deserializer in a node of a communications network are detected by error decode logic that assumes that each new error occurrence reflects a one bit error in the word giving rise to the error code. Each error occurrence is then counted. When the error count reaches a predetermined limit (e.g., 250 errors), the total bit count required to accumulate the 250 errors is then determined. The total bits can be determined based on a clock count (time). The BER is then calculated based upon the fixed error limit and the total bit count. This BER is then reported and used to determine the health of the network.

Type: Grant

Filed: March 2, 2001

Date of Patent: January 3, 2006

Assignee: Luminous Networks, Inc.

Inventors: Derek Mayweather, Steven Gemelos, Neil Mammen, Jason Fan

Business method for selling advertisements and traffic related services on electronic billboards

Publication number: 20050004842

Abstract: A business method designed to utilize electronic billboards to sell advertisements and traffic information.

Type: Application

Filed: July 1, 2004

Publication date: January 6, 2005

Inventor: Neil Mammen

Brief Architecture and Design Summary

Boards, Systems and FPGAs. Unless indicated, includes Design, Architecture, FW, SW, Systems Architecture and support. Covers some of the items mentioned above as well:

TAXIcab : TAXIchip Circuit Application Board: First high speed Serdes
TAXIvideo : TAXIchip Video Transmission Board: First Ever Demo of Digitized Video over Optical Fiber
Saavik 1 & 2: LSI Logic MPEG 2 over DS2 ISA Decoder board.
Spock I : 9U VME Audio/Video Multiplexing board
Spock III : 8 input Transport Stream Multiplexing board designed using FPGAs.
Sarek III : 9U VME C-Cube MPEG 2 Encoder board. Multiple FPGAs.
DV-MPEG : Hot-swappable NORTEL Chassis Codec System (6U) consisting of the 4 boards below.
Riker : IBM MPEG 2 Encoder board
William : Hot-swap NORTEL Motherboard for above Encoder.
Troi : C-Cube Decoder Board
Deanna : Hot-swap NORTEL Motherboard for above Decoder.
Atlas : 9U VME Fully Redundant mother board for a full featured Codec
Sammy : 9U VME Video Input, Audio Encoder, MPEG TS muxer board
Uhura : 9U VME 9 channel ATM TS multiplexer over OC3c or DS3
Aruhu : 9U VME 9/36 channel ATM TS demultiplexer over OC3c or DS3
Highlander : Multi-Redundant 44/40 U chassis 9 channel 9U Codec system
iCompression Single Chip Encoder
: Primary Systems level definition for the iCompression Single Chip MPEG 2 Encoder, also initiated the founding of iCompression and gave them $2M startup to provide me with a substitute for the C-Cube encoder. iCompression sold for $400M
Picard : iCompression Encoder PCI board.
ReMuxer : Architect of the MPEG2/ATM Multi-Re-multiplexer System and Chassis
TPM1 FPGA: DIVA Systems Transport Processor Module,
Completely re-architected and redesigned their Transport Processor FPGA.
TPMII : DIVA Systems Transport Processor Board II.
Architected the second generation of the DIVA board for Video on Demand. Architected and designed the core FPGA, the M4SPROC, a 4 stream MPEG TS processor.
TPMtester : DIVA Systems Tester board.
Architected, designed, debugged this large test board with multiple connectors and connections to allow a fast test and bring-up environment for the DIVA TPMII boards.
DVB2MII : Luminous Video TS DVB to Ethernet Board including all FPGAs. Implemented a module to convert and reconvert Video TS to IP over Ethernet to allow it to be transmitted over any 100baseT network. Board and FPGA was used for demo systems at shows and was used to capture a critical investment.
LMAC 1G :Luminous Backplane MAC FPGA. Multiple flavors of this FGPA were shipped in all Luminous Products, with multiple per card and upto 6 on the Switch Card.
LMAC 2.5G: Luminous Backplane MAC FPGA. This FPGA was shipped in all 2.5G Luminous products.
VIP Interface: FPGA that interfaces MPEG TS and I2S and SPDIF to a VESAVIP bus.
PCI to HPI bus interface: FPGA that interfaces PCI to local bus. Includes CCIR656 Interface to PCI, interface ensures ability to preview with VCR FF and REW inputs.
PCIexpress Northstar III: Implementation of Xilinx core for proof of concept. Done in 12 weeks to demo with working video.
PCIexpress FPGA/ASIC Verification suite of boards: Validation of PCIe and Video ASIC RTL in FPGA
PCIexpress ASIC board: Validation board for PCIe ASIC chip with video.
Multiple other PCIe designs.
Dolby HDR and Dolby Vision Boards (partial list): Contrast, Phoenix, Lanai, Pulsar, Pulsar II, Maui, Apollo (numerous other projects in the AR/VR field still confidential).

(Multiple other Consulting designs not listed as some are confidential).