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## SUMMARY OF WORK EXPERIENCE

Over the past 20 years, I have worked in the electronics industry. I have experience in the following fields: Military, Aerospace, Avionics, Automotive, Computer, Communications, and Medical Electronics. In the last ten years I have specialized in the use of Computer Aided Design (CAD) Systems for the design of Electronics.

Skills Summary: High Speed Designs, Multilayer Printed Circuit Boards (MLB), Surface Mounted Device (SMD), Digital and Analog PCB's, Double sided (PCB), Ball Grid Arrays (BGA), PCB's, Multi-Chip-Modules, Green Tape (MCM-C), Thick and Thin Film Hybrids, Ceramic Substrates, Wirebonds, MIL-STD 100, MIL-PRF-31032, IPC 2221, IPC-2222, IPC-2223, IPC-6011, IPC-6013, ANSI Y14.5M-1982.

CAD Systems Summary: PADS PowerPCB 5.0, Mentor Boardstation En2002, Cadence Allegro *Expert* R15.1/R14.0/R.13.6, Mentor Expedition 2000, Spectra (CCT) Router V10, AutoCAD 2002, Orcad 10 CIS, Microsoft Word, Excel, Office, Windows XP & 2000, CAD/CAM 350 V3.3. Solidworks 3D Modeler 2004.

### Employment History

April 2006 to Present under contract to various agencies, Medford, NJ. As a Freelance *Digital Photographer*, Photographing various events and architectural construction sites. Presently shooting for Paradigm Products Group, Inc. using Nikon digital equipment and Adobe Photoshop software.

February 2006 to April 2006 under contract to **Honeywell**, Sarasota, FL. As a *Sr. E-M Designer*, for custom avionics systems. Duties included updating mechanical (Sheet Metal, Black Boxes) and electrical (Cables and Harness) drawings. Also update PCB's to incorporate ECO's for LCD flat panel displays, cabin control systems, backlights, aerospace audio & video entertainment, information systems & components Cathode ray tube (CRT) monitors, Liquid crystal display LCD panels or monitors, Touch screen monitors, Plasma display panels (PDP) Made engineering changes to existing documentation using AutoCad 2005.

January 2005 to August 2005 under contract to **Lockheed Martin**, Valley Forge, PA. As a *Printed Circuit Board Designer*, Designed and updated printed wiring boards for ground support equipment and flight hardware using Mentor Boardstation RE EN2002. Used Fablink for documentation and post processing of the printed wiring boards. Made engineering changes to existing flex circuits and printed wiring boards using Boardstation RE and also incorporated revisions to cable and harness drawings with Mentor Cable station (LCable).

Skills Summary: Boardstation, Mentor EN2002, Design Architect LMS, Logical Cable, Fablink for Drawings, Artwork, PDM for documentation management, Military Standards, HP.CDE OS.

March 2004 to June 2004 under contract to **Tyco Electronics**, Eatontown, NJ. As a *Printed Circuit Board Designer*, Designed printed circuit boards for hi-reliability undersea light wave systems, for both wet and dry applications. The work assignment was to draw schematics using Orcad CIS and build schematic symbols when required. The layout work required communicating with the electrical engineer in the placement phase of critical components. Routed traces using Cadence Allegro, receiving input from the EE to setup the 15.1 constraint manager for high speed routes. Most boards had differential pairs and

signal integrity issues. After fabrication the boards were analyzed for performance and exceeded everyone's expectation which was attributed to a great team effort. Performed CAD librarian work and built footprints for Allegro's library, which included management of the library. Library work included revising older symbols and checking for DFM violations. We maintained quality by checking all of the newly created library components.

Skills: Cadence Allegro R15.1, Orcad CIS Rel 10.0

December 2003 to March 2004 under contract to **UEC Electronics**, Hanahan, SC as a *Printed Circuit Board Designer*. Designed multi layer PCB's for military aircraft test equipment which included the C17 and RAH-66 aircraft. Other military avionics projects including a simulated DME unit and other various avionics test equipment. The team also designed a DC/DC power supply module for a Gas Mass Flow sensor which is used in the automotive industry. We used Pads Logic and Power PCB for designs. Auto routed with the blaze router, and a lot of hand routing. Outputted PDF files for customers to review. We checked wiring diagrams and assemblies for form, fit and function. The team completed eleven designs in two months to meet the schedule. Also interfaced with contract manufactures for shipment of Gerber files.

Skills: Mentor PADS Power PCB V5.0, Logic, Windows XP, AutoCAD 2002, ASME Y14.5

June 2002 to September 2003 at **Virata Corp**, Raleigh NC. As a Sr. *Printed Circuit Board Designer* Designed multilayer sliver, reference designs, and bring up boards, for customer development systems using Mentor Power PCB Rev. 5.0 for DSL and communications processors for a semi conductor company and used Specctra (CCT) Router. Duties were to create net lists, placement of parts for routing, routing of diff pairs and sensitive analog circuits. Created Gerber files and outputted fabrication drawings. The job required the creation of assembly drawings and pick and place data.

Skills: Mentor PADS Power PCB V5.0, Orcad 9.2 CIS, Windows XP, AutoCAD 2000, ASME Y14.5.

March 2002 to May 2002 under contract to **W.L. Gore Associates**, Elkton, MD. As a *Printed Circuit Board Designer*, Worked on a team to design PCB's with BGA's for high speed test circuits using PADS software. Part of the teams work was to design a Optical Transponder for OC192 requirements with Cadence Allegro. The boards had differential pairs and matched lengths.

Skills: Cadence Allegro R.14.2, Mentor PADS Power PCB V5.0, AutoCAD 2000, Windows 2000.

April 2001 to February 2002 at **Infinicon Systems**, King of Prussia, PA. As a *CAD Engineer*, We designed Multi layer PCB's, backplanes and power supplies for Infiniband 2.5 GBS network equipment. We used Cadence Allegro PCB tools for the design with Orcad CIS schematic capture. Routed high speed signals such as hyper transport bus (differential pairs) in both micro strip and strip line configurations. Performed Cadence Library management, We built symbols and parts for the library. Worked as the company librarian. We trained in modeling pcb layouts for high speed simulation using Specctra Quest software and worked with the signal integrity engineer to route high speed signals. Work also included system administration work, installed OS's, networks, trouble shoot hardware and software.

Skills: Cadence Allegro R.14.0, OrCad 9.2 CIS, AutoCAD 2000, Windows 2000.

March 2000 to April 2001 at **Eastern Research Inc**, Moorestown NJ. As a *Printed Circuit Board Designer*. Designed PCB's, Multi-layer and double sided for high speed network hardware. We used Pads Power PCB tools for the designs. Redesigned PWB's to meet FCC and EMI requirements.

Skills: AutoCAD 2000, PADS Power PCB V3.0 & Logic tools, Windows 98, training in EMI.

October 1998 to March 2000 at **Lucent Technologies**, Optoelectronics, Breinigsville Pa. As a *Printed Circuit Board Designer*. Consultant on Mentor Graphics installation configuration. Trained Cadnetix's designers on Mentor Graphics version C2. The boards we designed were used in fiber optic amplifiers and laser optical systems. Used Cadence Allegro/ADP for packaging of bare die in ceramic MCM's. Constructed parts and geometries using LMS librarian. Also designed ceramic (HIC) hybrid integrated circuits. Worked with converting DXF and DWG files for use in CAD systems. Duties included getting quotations and ordering boards from vendors. Transferring files via FTP. Used IPC, UL, CSA specifications for PWB designs. Checked board Gerber files using CAD/CAM 350.

Skills Cadence Allegro/ADP, Mentor Graphics C2, LMS Librarian Training, ISO9000.

February 1998 to October 1998 under contract to **Interdigital** Valley Forge PA. As a *Printed Circuit Board Designer*. Trouble shooting of installation of new Mentor site. Supported design group. Training of designers. LMS librarian management work for RF designs using remote libraries. Duties included download and encryption of containers from Siemens ftp sites in Germany for designs to manufacture in other countries. Trouble shooting of installation of new Mentor site. Supported design group. Board designs were used in wireless local loop back wide band CDMA systems.

Skills Exceed, Power PCB v1.5, Mentor Graphics B4, Pantheon

July 1997 to February 1998 under contract to **Philips Consumer Communications**. Piscataway, NJ. as a *Printed Circuit Board Designer*. Designed accessory boards for CDMA & TDMA wireless phone systems (PCS). The boards used advanced component systems such as ball grid arrays (BGA's). surface mount components on both sides. Used Design Architect with LMS, Boardstation and Fablink. Converted RF designs to Pantheon for modification to area fill. Used Design Architect with LMS, Boardstation and Fablink. Also used variants for Sherpa outputs to manufacturing.

Skills Summary: Mentor V8.4, Design Architect LMS, Boardstation, Pantheon V4.1, Fablink.

December 1996 to July 1997 under contract to **UNISYS Corp.**, Tredyffrin, PA. as a *PRINTED CIRCUIT DESIGNER*. Designed large (VME9U) high speed boards for server systems. The boards used advanced component systems such as ball grid arrays (BGA's). Placement is done in boardstation, putting constraints in high speed layout (400 Mhz), the design is passed to Copper Chyan (CCT) router where groups and classes are added with a do file to satisfy the high speed circuit requirements. Final conflicts are resolved manually. Checking the board in Scepter for DFM.

July 1996 to December 1996 under contract to **LOCKHEED MARTIN FAIRCHILD SYSTEMS**, Syosset, NY. as a *PRINTED CIRCUIT DESIGNER*. Modified the Dicomed digital camera boards for testability and greater manufacture ability. Used test prep to add testpoints, and incorporated ECO's. Took part in design reviews. Designs used buried vias. Boards had special thermal requirements. Active SMD's on both sides of the boards. Used 3rd party netin for schematic changes. Also designed flex prints for other imaging cameras. Set script files for new users, and provided technical answers about the Allegro software to new users.

August 1995 to July 1996 as a *PRINTED CIRCUIT DESIGNER* under contract to **HARRIS CORP.** GASD Melbourne, FL. Designed high speed (100 to 200 MHz) fiber optic boards using MECL circuitry, signal freq.'s of 1 Ghz. Routed traces as differential pairs, daisy chain connections on controlled impedance layers. Manually routed critical 50 Ohm, 100 MHz connections. Performed signal noise analysis. Auto routed multilayer PCB's using the Prevail router. Used Netscape for library management and construction of SMT footprints and pad stacks. Produced detail and assembly drawings. Participated in TQM, employment involvement teams meeting on the Allegro layout process. The boards meet military specifications and IBC-275.

1965 to 1994 Drafting and Design at Motorola, Harris, AT&T, NCR, IBM, Ford, RCA, Burroughs, Sperry Univac

## **EDUCATION**

2004 Solidworks 2004 Basic training

2001 IPC conference presented paper and attended Specctra Quest training for signal integrity.

2001 Attended training course in Mentor Expedition 2000 at Applied Cad.

2000 Course in EMI Compliance for PCB'S by Mark Montrose IEEE

2000 Certified IPC Designer

2000 Taught AutoCad Release 14 at Arcosanti Urban Laboratory, Arizona.

1998 Autodesk Design World, Mechanical Design.

1997 High Speed Design of PCB's, In-house at Lucent1994 IPC Land Pattern Design (IPC782-A)

1993 Auto Router Training on the (CCT) Specctra /Cooper & Chyan Router

1993 Multi-Chip-Module Design, Northampton College

1991 University of Wisconsin, Advanced Hybrid/MCM Design