



## Education:

Pennsylvania State University – BS in Electrical Engineering, 1985

## Academic Experience:

University of Colorado at Boulder, CO – Senior Instructor (part time from January – August 2016, full time August 2016 to present)

IoT Embedded Firmware, ECEN 5823 – January 2016 to present

<https://sites.google.com/colorado.edu/ecen5823/home>

Low Power Embedded Design Techniques, ECEN 5023-001 – August 2016 to present

<https://sites.google.com/colorado.edu/ecen5023-002>

Computer Organization, ECEN 4593 – January 2017 to present

<https://sites.google.com/colorado.edu/ecen4593/home>

ASIPs and IP Processor Core Design, ECEN 5013-003 – January 2018 to present

<https://sites.google.com/colorado.edu/asips/home>

Internship for Credit, COEN 3930-571 – January 2019 to present

<https://sites.google.com/colorado.edu/coen3930ecee/home>

Digital Design Lab, ECEN 3360 – January 2019 to present

Director of Internship for Credit, ECEE Department, May 2018 to present

Associate Chair of Undergraduate Education, ECEE Department, October 2018 to present

## Non-academic experience:

Personal member of RISC-V Foundation

October 2017 to present

- The RISC-V non-profit foundation is established to maintain and manage the RISC-V Instruction Set Architecture as well as promote the development of the RISC-V eco-system
- Attended the November 2017 RISC-V workshop

Vice President of Sales at Thorson Rocky Mountain

January 1999 to August 2015

- Participated in acquiring suppliers, hiring sales people, developing corporate sales strategies, and managing the sales team for \$100+ million sales organization, \$25 million line management, and \$15 million in sales.
- Managed 3x industry sales growth for Thorson supplier's Texas Instruments, Silicon Labs, HiFn, and Vitesse.
- Lead initiatives in the startup, Alternative Energy, Solar EPCs, and Internet of Things markets to grow Thorson's account base.
- Orchestrated factory VP, FAE, and Marketing visits as well as factory engineering resources to secure key business opportunities.
- Products sold include DSPs, microcontrollers, ASICs, digital, analog, mixed signal, interconnect, and board/system level products.
- Ran Thorson's 401k retirement program, NBO system, computers, and VOIP/internet services.

Technical Field Sales at Thorson Rocky Mountain

September 1991 to January 1999

- Sold solutions into applications spanning workstations, industrial controls, wireless radios, mass storage, and telecommunications.
- Covered accounts included Hewlett Packard, StorageTek, Avaya, Woodward Governor, DEC, SpectraLink, and Advanced Energy.

Engineering Program Lead at Quest Computers

January 1991 to June 1991

- Led the engineering of the first PC notebook with integrated cellular modem.
- Managed the engineering team to coordinate the development of the system architecture, mechanical design, and system layout.



## Lead Project Engineer at Solbourne Computers

September 1987 to January 1991

- Led the technical project of the first Sun compatible workstation including team lead for the system architecture and system validation which included 4 ASICs and a custom CPU.
- Co-designed the first Sun compatible multi-processor server which led the way for virtual cache based multi-processor systems.
- Coordinated the product transfer of Solbourne's Sun compatible server and workstation projects to manufacturing.

## Electrical Engineer at Hewlett Packard

July 1985 to September 1987

- Co-developed first Floating Point Accelerator for HP's workstation platform.
- Defined product objectives with Marketing, developed and designed board architecture, coordinated software integration, and transferred product to production

## Certifications or professional registrations:

None

## Current membership in professional organizations:

None

## Honors and awards

- Pennsylvania State University Schreyer Honor College Graduate (1985)

## Service activities:

- Pennsylvania State University Schreyer Honor College Interviewer (December 2013 - Present)
- Pennsylvania State University Schreyer Honor College Mentoring with Honors (November 2016 - Present)
- Pennsylvania State University Schreyer Honor College Scholar Alumni Society Board (November 2016 - Present)

## Publications and Presentation:

- Signal Integrity Journal article, "Ten Tips for Best Board Design Practices for IoT Applications," authored by Eric Bogatin, Keith Graham, Vivek Sankaranarayanan, and Sairam Muttavarapu. Published March 27<sup>th</sup>, 2017 via the web link, <https://www.signalintegrityjournal.com/articles/379-ten-tips-for-best-board-design-practices-for-iot-applications>.
- Embedded World 2018 paper and presentation, "Precisely engineered RISC-V embedded processors in 30 days," Nuremberg, Germany on February 27<sup>th</sup>, 2018
- RISC-V Rocky Mountain Meetup, "Benefits of Modifiable Cores," at Sparkfun on July 12<sup>th</sup>, 2018

## Professional Development Activities:

- Investigating the use of Energy Harvesting technologies with Low Energy through Event Driven Firmware techniques
- Altium schematic and PBC layout tool
- Codasip Application Specific Instruction Set Processor, ASIP, development tool
  - o Researching the development of an extremely low energy ASIP to combine with Energy Harvesting technologies



- Researching the development of custom RISC-V embedded processors to hit key performance, power, and cost points to provide unique customer experiences previously not attainable
- Investigating implementing security of FPGAs and ASICs via hardware authentication to detect whether hardware based malware has been inserted into the design
- Co-host the RISC-V Rocky Mountain Meetup. This group sponsors a meetup every two months where RISC-V leading industry companies present the latest technologies and tools