

# KARTHIKEYAN SABHANATARAJAN

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## OBJECTIVE:

Seeking a challenging full time position in the fields of Embedded Systems design, Computer Networking and Computer Architecture utilizing my software, hardware and analytical skills

## EDUCATION:

**Master of Science, Electrical & Computer Engineering** August 2008  
University of Florida, Gainesville, Florida GPA: 4.0 /4.0  
**Bachelor of Engineering in Electronics & Communications** May 2006  
Anna University, Chennai, India Percentage: 85 / 100

## EXPERIENCE:

- **Research Assistant and Project Leader** August '06 – Present  
*Energy Efficient Ethernet Project (NSF NETS/NBD)*  
Advisors: Dr. Alan D. George, Dr. Ann Gordon-Ross  
Dept. of Electrical & Computer Engineering, University of Florida  
*Lead a team of 3 Research Assistants in the design and development of Energy Efficient Ethernet Controller (NIC), prototyping the concepts of IEEE 802.3az Rapid PHY Scaling (RPS) and Power Proxying*
- **Research Assistant , Wireless Networking R&D lab, Anna University, India** July '05 – May '06

## PUBLICATIONS:

**K.Sabhanatarajan, A.Gordon-Ross, M.Oden, M.Navada, A.George, "Smart-NICs: Power Proxying for Reduced Power Consumption in Network Edge Devices", IEEE Computer Society Annual symposium on VLSI (ISVLSI), April 2008, Montpellier, France.**

## RELEVANT GRADUATE AND UNDER-GRADUATE COURSES:

Graduate Computer Communication, Data & Computer Networking, Embedded Systems, Computer Architecture, Parallel Computer Architecture, Billion Transistor Computer Architecture, Reconfigurable Computing

## PROJECTS:

- Currently involved in **prototyping Energy efficient Network Interface Card** May '07 – Present  
implementing the IEEE 802.3az Rapid PHY scaling concept, which adapts link rate according to the link utilization using MAC handshake mechanism. Specifically involved in interfacing our custom NIC to the x86 platform and writing Linux device driver
- Developed a UART character device driver implementing concepts of Busy-waiting & Interrupts Jan'08
- Gained Hands-on experience in **NIC and router architectures (first generation)** using Aug '07 – Jan'08  
Stanford NetFPGA and RiceNIC platforms.
- Implemented a **hybrid energy efficient deep packet content inspector** utilizing Bloom Nov'07 – Jan'08  
Filters and Content Addressable Memories (CAMs) for NIC based Network Intrusion Detection system.
- Devised a **software packet classifier using embedded PowerPCs** (using C) on Xilinx May '07 – October'07  
Virtex-II Pro and compared its performance to CAM based classifier for power proxying
- Developed a **Content Addressable Memory based parallel packet classifier** for Network August '06 – March '07  
Intrusion Detection Systems (NIDS) - (using Verilog)
- Designed a **dynamically adaptive cache algorithm** for improving Energy Efficiency in Oct '06 - Dec '06  
SimpleScalar simulation environment (using C).

## TECHNICAL/COMPUTER SKILLS:

**Programming / HDL Languages** : C, Python, Java, Shell Scripting (BASH), Verilog, VHDL  
**Device Driver / Architecture Skills** : **Linux device driver, x86 assembly & architecture, PCI, SimpleScalar, Watch**  
**Real time Networking Platforms** : Stanford NetFPGA router platform, RiceNIC  
**Operating Systems** : Linux, UNIX, Windows  
**Hardware Platforms** : Xilinx Virtex-II Pro, Xilinx Virtex 4  
**EDA Design Tools** : Xilinx Embedded Development Kit (EDK), Xilinx ISE, Chipscope

## AWARDS AND HONORS:

- University of Florida International Center Certificate of Outstanding Academic Achievement
- Member of "Eta Kappa Nu" honoring academic excellence in Electrical and Computer Engineering