Gabriel S. Knezek

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gabesk.github.io

Skills

OS KERNEL DEVELOPMENT AND VALIDATION
- Kernel mode C programming
- WDM and WDF driver authoring
  - Speciality in power mgmt
- PCI, I2C, SPI, GPIO knowledge
- ARM and x86 SoC platform bring-up
- Silicon partner co-engineering

FPGA AND EMBEDDED SYSTEMS
- Verilog HDL development and verification on FPGAs using Xilinx ISE and ModelSim
- Basic PCB layout
- Host-to-FPGA Ethernet interfaces and inter-FPGA high-speed serial links
- AVR microcontroller programming

DESKTOP SOFTWARE ENGINEERING
- App dev in Java, Python
- UX design
- Project architecting, leadership, and execution
- Customer-facing documentation
- Testing

Overview

Senior software engineer at Microsoft with nine years experience working in the Windows kernel on bus technologies (PCI express, I2C, GPIO) and energy efficiency (maintainer of hibernate and driver runtime power management framework). Experience designing and troubleshooting embedded systems with microcontrollers and FPGAs as well as basic PCB layout. Strong soft skills in silicon-partner co-engineering and project architecting, documentation, and implementation.

Experience

SENIOR SOFTWARE ENGINEER (2016), SE II (2014), MICROSOFT; REDMOND — 2014 - PRESENT
- Windows kernel developer in Energy Efficiency team
- Maintainer of hibernate and driver runtime power management framework (PoFx)
- Ported hibernate to Windows ARM64 platform, including OEM co-engineering with QC
- Authored driver runtime performance state framework
- Co-authored System Power Report; tool for diagnosing computer power usage

SOFTWARE ENGINEER (TEST) II (2013), SDET, MICROSOFT; REDMOND — 2010 - 2014
- Designed and validated ACPI language for Simple Peripheral Bus (I2C, SPI) communications
- Co-designed and patented enhanced mechanism for software GPIO debouncing
- PCI tester for Thunderbolt; bringup of Surface Pro 3 WiFi with PCI Surprise Reset and Recovery
- Microsoft representative for two Intel OEM integration camps in Taiwan - tablet bring-up
- Driver integration engineer for Surface RT platform, including root-causing hardware defects

RESEARCH ASSISTANCE; TEXAS A&M; COLLEGE STATION, TX — 2007-2009
- Graduate student under Dr. Steve Liu in the Real-Time and Distributed Systems Lab
- Wrote reconfigurable FPGA HDL for image processing and regular expression algorithms, Ethernet communications
- Teaching Assistant for Microcomputer Systems class
  - Won Teaching Assistant Excellence Award

MICROSOFT RESEARCH; REDMOND — SUMMER 2009
- Prototyped hardware model checking system in Verilog and Python (Dr. Alessandro Forin)

SIEMENS TECHNIK AKADEMIE, SIEMENS, AG; BERLIN, GERMANY — 2006
- Developed embedded system lab exercises, including hardware design and AVR C programming

TEXAS CENTER FOR APPLIED TECHNOLOGY; COLLEGE STATION, TX — 2003-2005, 2007
- Authored networked Java-and-Flash-based emergency training simulation

Education

- Master of Science, Computer Engineering, 2015
    - Thesis: A Multi-FPGA Networking Architecture and Its Implementation.
- Bachelor of Science, Computer Engineering, 2007

- Study abroad with courses in Cryptography, Network Security, Control Theory taught in German

Publications

- Knezek, Gabriel S (2015). A Multi-FPGA Networking Architecture and Its Implementation. Master's thesis, Texas A & M University.

- H. Wang, S. Pu, G. Knezek, and J. Liu, *MIN-MAX: A Counter-Based Algorithm for Regular Expression Matching*, IEEE Transactions on Parallel and Distributed Systems, vol. 24, pp. 92-103, 2013.

- H. Wang, S. Pu, G. Knezek, *A Modular NFA Architecture for Regular Expression Matching*, FPGA 2010, Monterey, California, 2010.

- G. Knezek, H. Ying, and J. Liu, *A Dynamically Reconfigurable FPGA Architecture for Biomedical Applications*, Proceedings of the 1st Workshop on Biomedicine in Computing, ISCA-36, Austin, 2009.

- R. Murphy, M. Konyo, P. Davalas, G. Knezek, S. Tadakoro, K. Sawata, and M. Van Zomeren, *Preliminary Observation of HRI in Robot-Assisted Medical Response*, HRI '09, La Jolla, California, 2009.

Patents