Andrzej Jakubowski

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Residence: Denver, CO

EMBEDDED SOFTWARE ENGINEER

SUMMARY:

Twenty years plus experience designing, developing and integrating real time embedded software including:

- Ground control software for launch vehicles for government and commercial space flight.
- Software for interactive program guide for digital set-top boxes for cable TV.
- Interface between interactive program guide and video on demand applications.
- Diagnostic software for signal analysis running on cable modems.
- Real time embedded software for dialysis machines and electrosurgical generators.
- Time-frequency and wavelet-based tool for analysis of turbulence/rotor interactions.

Acknowledged for analytical and problem-solving skills with ability to deliver on schedule. Reputation for ability to work well with others and good communication skills. A proven track record of overseeing successful definition, development, integration and testing of digital interactive TV projects.

SKILLS AND TECHNOLOGIES:

Programming: C/modern C++, Python (Numpy, Scipy, OpenCV, sklearn, tensorflow, keras) and Matlab.

Operating Systems: RedHawk Linux RTOS, VRTX, VxWorks, OS21, MTOS and FreeRTOS

CPUs/Hardware: Intel Puma 5/6, MIPS 3K/5K cores, STM Home Video processors, Raspberry Pi, BeagleBone Black, Arduino, STM32 and ESP32, Motorola 68332, 68HC11 and 6809 and Intel 8051.

Tools: Buildroot, Yocto, NightStar debugger, In-circuit emulators - Nohau (8051, 68HC11), Orion (6809), Microtec (68332), logic analyzers, DSO, waveforms generators, DMMs , Jira, git, GitHub, BitBucket, Crucible code review tool and Wireshark.

Standards and Technologies: MIL-STD-1533, DVB (cable, satellite and terrestrial), SNMP (for remote diagnostics on set-tops and cable modems), RDK-V, RDK-B, DOCSIS 3.0 and 3.1, OpenWRT, AWS cloud environment, CI/CD pipeline, configuration management, Docker, microservices and Chef.

PROFESSIONAL EXPERIENCE:

United Launch Alliance 10//2022 – present Centennial, CO

Aerospace defense contractor and launch services provider that manufactures and operates rockets that launch spacecrafts into Earth orbit and trajectories to other bodies in the Solar System.

Embedded Software Engineer V - Software Engineering Department

- Defined, designed, implemented, integrated, and tested ground control software for recurring Atlas and Delta programs, as well as Vulcan development.
- Developed integrated ground software using real-time hardware-in-the-loop simulations.
- Led and participated in requirements and design walkthroughs, collaborating with multidisciplinary stakeholders. Conducted qualification test definition and verifications.
- Provided launch support by shadowing system operators, troubleshooting and resolving issues during the launch process.
- Implemented Test-Driven Development to ensure high-quality and maintainable code.

Charter Communications 01/2018 – 10/2022 Greenwood Village, CO

Telecommunications company that offers its services to consumers under the branding of Spectrum, second-largest cable operator in the United States.

Principal Software Engineer I - Video Software Development

- Responsible for defining, designing, implementing and reviewing video software applications, STB applications and distributed cloud-based back-office applications.
- Works with Product, Architecture, Development, QA, Operations, Business Intelligence and 3rd party vendors on the STB application design, configurations, deployments, monitoring and technical documentation.
- Deep technical understanding of Zodiac PowerUp middleware and Active Video CloudTV platform while supporting analysis of issues, implementing new functionalities and defining requirements for new features.
- Processed and resolved complex company projects such as Auto-Activation, Instant Upgrade, DVR improvements, tuner conflicts and video resolution enhancements.

Comcast Corporation (consulting through Digital Beam) 10/2015 – 12/2017 Denver, CO

Digital Beam is a professional consulting firm, supporting leading broadband service providers and product manufacturers in the cable, media and mobile industries.

Senior Software Engineer:

- Prototyping on cable modem reference SDK: Intel Puma5/6/7 and RDK-B
- Developed code running on Embedded Spectrum Analysis Modules (ESAM) for discovery and reporting of signal impairments.
- Developed code running on virtual meters (handheld devices) working with tablets and used by field technician troubleshooting problems within cable TV infrastructure.
- Developed code for remoted setup and configuration of ESAM and virtual meters through SNMP and web server.
- Developed code for spectrum analysis through FFT and QAM constellation.
- Design of ESAM and virtual meters were implemented on customized cable modems running embedded Linux on Intel Puma chipset (DOCSIS 3.0, DOCSIS 3.1) under RDK-B

Rovi Corporation 05/2011 – 10/2015 Golden, CO

Rovi Corporation is a global leader in digital entertainment technology solutions, powering the creation, distribution, discovery, and enjoyment of entertainment at home or on the go.

Senior Software Engineer:

- Designed and developed interface for integration of interactive program guide on Motorola advanced set-tops with new Rovi TotalGuide application.
- Designed and developed interactive program guide for advanced multi-tuner set-top boxes with digital video recorders, video on demand, remote and multi-room recording.

OpenTV Inc. 07/2006 – 05/2011 Golden, CO

OpenTV develops middleware solutions enabling advanced digital television services including interactive television as well as interactive and addressable advertising.

Senior Software Engineer:

- Designed, developed and integrated highly customized software packages for cable, satellite and IPTV customers based on OpenTV middleware.
- Developed remote diagnostic software for set-top box – cable and IPTV (SNMP)
- Implemented and deployed DVR solution on dual tuner environment with series recording.
- Developed software solution for bringing of ARIB compliant subtitles within DVB-C signal.

GuideWorks (Comcast) 03/1999 – 07/2006 Englewood, CO

GuideWorks delivers leading on-screen program guide for digital cable, enabling viewers to take control of their digital cable television experience.

Principal Engineer:

- Designed and developed interface for integration of interactive program guide with video on demand and t-commerce clients.
- Designed and developed software for advanced multi-tuner set-top boxes with digital video recorders. (Motorola and OCAP set-tops)
- Implemented compression algorithm used for multi-lingual text and fonts that saved over 6KB on memory constrained platform.
- Designed and developed interface for auto-discovery of video on demand client, thus allowing scalability and wide deployment in cable systems.
- Project lead for interactive program guide for multi-tuner advanced set-top boxes, project was feature completed on schedule.
- Worked closely with external vendors (video on demand and t-commerce) during all phases of integration projects.

Gambro AB 1998-1999 **Lakewood, CO**

Gambro AB is a global medical technology company with leading positions in renal care - services and products - and blood component technology.

Embedded Software Engineer:

- Designed and developed software for dialysis machines, in accordance with FDA requirements and Medical Device Directive.
- Designed and implemented controllers to regulate dialysate conductivity and control mass balance. Programmed in C. OS included: MTOS-UX, Unix –SunOS Win 95/NT/2K, Matrixx.

National Renewable Energy Laboratories 1998-1999 **Golden, CO**

NREL works with members of the wind energy industry to advance wind power technologies that lower the cost of wind energy through research and development of state-of-the-art wind turbine designs.

Consultant:

- Developed software package allowing for application of multi-resolution decomposition, spectrograms, wavelet spectral power and reassigned spectrograms using a full range of wavelet bases to analyze time series of atmospheric turbulence and wind turbine structural dynamics signals. Programmed in Matlab.
- Co-authored paper presented at 2000 ASME/AIAA Wind Energy Symposium - 'Using Time-Frequency and Wavelet Analysis to Assess Turbulence/Rotor Interactions'

Aspen Laboratories 1991-1998 **Englewood, CO**

Aspen Laboratories designs and manufactures surgical instruments and devices.

Embedded Software Engineer:

- Defined software requirements, designed and developed real-time embedded software for electrosurgical generators and argon beam coagulators. Conducted tests and debugging.
- Performed Fault Tree Analysis, Failure Mode Analysis, Risk Analysis and Reliability Analysis, integration and prototyping, created tests plans. C and assembler.

EDUCATION:

Master of Science in Computer Science
Georgia Institute of Technology
Graduated 2020

Master of Science in Electrical Engineering
University of Colorado at Denver
Graduated 1999

Master of Science, Electrical Engineer
West Pomeranian University of Technology,
Szczecin, Poland Graduated 1987

ADDITIONAL COURSEWORK:

Hands-On Embedded and Real Time Linux – University of California at Berkley Extension

Advanced Programming in Java – University of Colorado
Programming in C# .NET – Red Rocks Community College
Engineering Management – University of Colorado at Boulder CAETE
Object Oriented Analysis and Design with UML – Batky-Howell Training Center
Digital Headend and DAC 6000 Operations – Motorola Training Center
Hardware Portability Kit for OpenTV middleware – OpenTV

PUBLICATIONS:

'Using Time-Frequency and Wavelet Analysis to Assess Turbulence/Rotor Interactions' - N. Kelly, R. Osgood, J. Bialasiewicz and A. Jakubowski NREL January 2000 presented at 19 th ASME/AIAA Wind Energy Symposium. Best Paper Award.

PATENTS:

Co-author of "System and Methods for Providing a Scan" six patents granted: US 8,095,951 B1 - 8,127,329 B1 - 8,387,089 B1 - 8,429,686 B2 - 8,787,736 B2 - 9,185,332 B2.
Co-author of "Dynamic Bandwidth Service Limits" US 11,523,002 B2.

PROFESSIONAL ASSOCIATIONS:

Eta Kappa Nu Association - Electrical Engineering Honor Society