

Summary

MS in Computer Science and BS in Physics with 20 years of industry experience in software engineering. Most recently, principal software engineer and architect for the TruTouch non-invasive alcohol monitor. Expertise in the design and implementation of custom embedded Linux systems, device drivers, networked applications, algorithms, V&V, and code optimization. Proficiency in building back-end support for product development including development servers, scientific computing clusters, intranet services, configuration-control tools, and developing systematic processes and solutions at all levels and development stages.

Interested in roles that involve one or more of: creative software development, hardware interfacing, scientific applications, and development of novel, long-term, solutions to difficult or interesting problems. Preference to working in diverse environments that integrate a variety of skillsets, technologies, and people.

<https://www.linkedin.com/in/blaaksonen>

Experience

B PLUS PLUS, LLC

Principal, Founder, 2009-present

Consulting in creative full-stack software development with over 20 years of experience developing solutions from custom, from-scratch, embedded Linux operating systems, to high-level command and control desktop applications, along with supporting IT infrastructure.

TRUTOUCH TECHNOLOGIES

Director of Software Development, 2005-2018

Served as the Director of Software Development bringing the world's first truly non-invasive alcohol monitor – which uses near-infrared spectroscopy to interrogate tissue and determine alcohol concentration – to market in 2007, with follow-on products in 2008 and 2013.

Responsible for the architecture, development, and life cycle of the embedded system (Linux/C/RTAI/Bash) and associated networked applications (C#/MATLAB/Socket) for three generations of commercial TruTouch products including the TruTouch 1100, 1250, and 2500, as well as upcoming generations of instrumentation in R&D phases. Designed a custom embedded system to support a wide range of uses in, among others, commercial products, laboratory experiments, clinical studies, and special, targeted-use scenarios.

Developed the infrastructure and processes that governed all software development and releases. Implemented all mathematical algorithms, state logic and data flow, Linux hardware drivers, high-level logic & QC, and autonomous health self-assessment. Core improvements to the mathematical algorithms and flow resulted in an order of magnitude efficiency improvement over previous software generations, greatly simplifying the hardware and electronics. Developed embedded and network tools that automated manufacturing processes, instrumental QC, data management, and system maintenance. Developed PC applications that interfaced with, and managed instruments.

Designed and implemented an efficient hybrid Linux/Windows Domain and intranet (AD/Kerberos/LAMP/Samba/DFS/...), tying together all facets of the business from product development through marketing and sales.

VERALIGHT

Research Scientist & Scientific Programmer, 2011-2012

Developed a software infrastructure (MATLAB/Bash/MySQL/Perl/Apache) for running massively parallelized minimization and optimization problems over several hundred computing nodes, which served as the backbone for research and development. Worked to optimize, standardize, and create user friendly front-ends to the computing resource. Designed, and implemented the back-end server that managed the system and associated terabytes of data. Efforts resulted in vastly increased throughput of jobs, allowing the team to meet strategic corporate goals in tight time frames.

INLIGHT SOLUTIONS

Research Scientist & Scientific Programmer, 2000-2005

Designed and built a software infrastructure (MATLAB) to rapidly transition ongoing multidisciplinary scientific research and ideas into practical applications running on, or interfacing with, prototype medical instrumentation. Output included optimized, low-level mathematical algorithms and tools through high-level, visualization applications. This effort allowed the technical team to be agile and responsive in a high-paced environment. Software infrastructure was designed for reuse and rapid automated verification.

BOEING-SVS

Systems Engineer, Controls & Simulation Group, 1996-2000

Developed end-to-end, physics-based simulations for the world's largest and most complex laser missile defense systems including the Airborne Laser (ABL), Space Based Laser (SBL), and Tactical High Energy Laser (THEL). Assumed the lead role in developing the software architecture necessary to build simulations of the complexity mandated by these programs. The success of these simulations led to new contracts and an expanded group, and a suite of simulation technologies rigorously tested and validated over a half decade and used in all of Boeing's directed energy programs.

Community

BENTLEY DANCE FIT

Principal, Founder, 2014-present

Hosting ZUMBA® fitness classes as a licensed instructor in the Albuquerque, New Mexico, area for more than five years. Studied modern dance, hip-hop, African, flamenco, Mexican folk, and ballroom at UNM while pursuing a Masters in Computer Science. Founded Bentley Dance Fit to host energetic, choreographically diverse, workouts for the community.

Education

DEGREES

M.S. Computer Science, University of New Mexico, 2017 (4.1/4.0 @32 hours)
B.S. Physics & Computer Science, Gettysburg College, 1995 (3.9/4.0 @108 hours)

AWARDS/HONORS

Graduated summa cum laude (1995)
Graduated with honors in physics, honors in cs (1995)
Dean's list (1991-1995)
Miller Senior Prize in physics (1995)
Julius Eno Physics Prize in physics (1993)
Freshman Miller Prize in physics (1992)
Malcolm R Dougherty Award Mathematical Award in mathematics (1992)
Phi Beta Kappa (1995-present)
Alpha Lambda Delta-National Academic Honor Society (1991-1995)

Professional Skills

- **Engineering:** {Software, Firmware} architecture/development, {Embedded, Desktop, Enterprise} Linux development/deployment/configuration/maintenance, IT {Infrastructure, Security}.
- **Programming:** C, C++, C#, Bash, MATLAB, css, html, Perl.
- **Linux:** Embedded, {2.4, 2.6, 3.4, 4.x, 5.x} Linux Kernels, RTAI/RTOS, Device drivers, ext{3,4}/encfs, Custom/LFS, CRUX, Gentoo, pedestrian distributions (Ubuntu, MINT, ...).
- **Networking:** TCP/IP, USART/RS-232, CAN, I2C, I2S, raw sockets, dns/bind/tls, dhcp, samba/cifs, apache, windows DCs, iptables/firewalls, DFS, LDAP, SonicWall, QNAP.
- **Hardware:** at90, at32uc3c, FTDI, WIZnet, ppc, mpc603e, x86, amd64.
- **Technology:** Algorithms, Optimization, Correctness, Comm/Sockets, Infrastructure, Simulation.
- **Processes:** System architecture, Release management, Agile, Subversion, Git, Markdown.
- **IDEs:** Visual Studio, Atmel Studio, gcc/make/gdb.
- **Interests:** Python, Julia, Haskell, javascript, Android Studio.
- **Other:** Dance fitness, body building, bicycling, running, fitness.

CLEARANCES HELD

DOD Top Secret (2000)
DOD Secret (1997-2000)

Patents

Noninvasive determination of intravascular and extravascular hydration using near infrared spectroscopy.
Remote and local transfer of information in noninvasive hydration measurements.
Apparatus and Method for Controlling Operation of Vehicles or Machinery by Intoxicated or Impaired Individuals.
System for Noninvasive Determination of Alcohol in Tissue.
Methods and apparatuses for improving breath alcohol testing.
System for Noninvasive Determination of Analytes in Tissue.

Publications

Robust Calibration Transfer in Noninvasive Ethanol Measurements, Part II.
Comparison of spectroscopically measured finger/forearm tissue ethanol concentration to blood/breath ethanol measurements.
Comparison of spectroscopically measured tissue alcohol concentration to blood and breath alcohol measurements.
New Rotation Periods in the Pleiades: Interpreting Activity Indicators.
Rotational periods and starspot activity of young solar-type dwarfs in the open cluster IC4665.
UBVRI Photometry of the Type Ia SN 1994D in NGC 4526.
Rotation Periods of Open-Cluster Stars. III.
Rotation Periods of Open-Cluster Stars. II.