

SEAN HALLE

ADDRESS

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PERSONAL DETAILS

Nationality: US
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OVERVIEW/SUMMARY

Sean is an inventor who has worked on many creative projects. The most recent is a custom wifi router that accurately locates client devices to within 50cm. Other projects have included the first low-cost oscilloscope to use a TV as display (in the early 90's), a phase correcting digital crossover that eliminates time shifts between audio frequency bands, and a robot that performed in modern dances. Sean has also had a career in enterprise software and in research, holding a PhD in parallel computation.

SKILLS

languages: Assembly (PIC, MIPS, ARM, x86, 8051, Z80, 6502), C, C++, Java, Python, Perl, shell

Tools: IAR workbench, MPLab, Simulink, Matlab, MathCAD, Git, Mercurial, SVN

Skills: PCB layout, digital circuit design, analog circuit design, power electronics

EDUCATION

- May 1992: UC Berkeley, BSEE, Dept. of Electrical Engineering and Computer Science.
- May 1994: UC Berkeley, MSEE, Dept. of Electrical Engineering and Computer Science.
Thesis on *Experimental Chaos*. Published the first papers on "Gain from Chaos," "Spread Spectrum Communication Using Chaos," and "Secure Communication Using Chaos." The papers, combined, have 680+ citations. Advisor: Leon O Chua.
- June 2011: UC Santa Cruz, PhD, Dept. of Computer Engineering.
Dissertation on *theory of parallel computation and tools for delivering performance-portable parallel software*. Advisors: Albert Cohen (INRIA, Paris), and Jose Renau (UC Santa Cruz).
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EXPERIENCE

- Jun '14 to Aug '14 Created a motor control system for a Dissolution Tester, and an embedded advertisement device for busses in Haiti.
- Apr '14 to Jun '14 Designed system of wifi routers that locate a mobile device to within 50cm. Employs ARM microcontroller and OpenWRT router software.
- Apr '13 to Apr '14: ERCIM Fellow, Post-Doctorate researcher at CWI, Amsterdam.
Advanced the proto-runtime system for parallel runtime systems. Applied it to the Reo language and the ABS language, and created a generalization for distributed memory models. Produced a formal theory of synchronization constructs and proofs of the generality of the proto-runtime approach.

- Jul '12 to Apr '13: Applied the classification style embedded neural network chip produced by Cognimem Inc to major Machine Learning algorithms. Involved PCB design, chip design, and coding in C.
- Jun '11 to Jun '12: Post-doctorate researcher at Technical University Berlin.
- Oversaw 6 students who worked on the design of a low-power GPU that is free from programming and application restrictions, verifying a fundamental model of parallel computation, improvement of the proto-runtime approach, and implementation of the HWSim language using proto-runtime.
- Apr '08 to Apr '11: INRIA, Paris and Ecole Normale Supereur: Performed research on Portable High Performance Parallelism.
- Demonstrated DKU and BLIS framework in Java and in C, running on multi-core shared memory machines, a heterogeneous collection of them and on the Cell processor. Designed WorkTable and HWSim parallel programming languages. Created the proto-runtime toolkit, a hardware abstraction to simplify creation and implementation of parallel languages.
- Sept '03 to Apr '08: UC Santa Cruz: Performed research on a theory of parallel computation, and developed a programming system for performance-portable software called CodeTime, in addition to an analytic performance model for out-of-order pipelines.
- Apr '02 to Sept '03: Designed and implemented a DSP based digital crossover that employs a novel technique to frequency and phase correct commodity drivers and to time-align the wavefronts leaving the audio drivers, including sub-woofer. Resulted in superior perceived experience from low cost drivers.
- Dec '00 to Apr '02: Nevik Networks: As Chief Software Architect, designed and was responsible for the team implementing a telecom abstraction layer that provides web-based end-customer provisioning of big-iron class 5 switches as well as soft-switches. Led development, drove requirements gathering and scoping of the product. Company folded in 2002.
- Dec '99 to Dec '00: SRI International: A member of SRI's enterprise software consulting spin-off. Designed a high speed trading system for Deutsche Bank's fixed income securities market. Co-architected, for American Century, an integrated financial system. Contributed papers analyzing and detailing electronic exchanges. Technical lead on implementation of a financial planning services exchange. Company folded in 2000.
- Apr '98 to Dec '99: Started Halle Sound Research. Designed, built, and sold audio power amplifiers, electronic crossovers, and novel topology switching power supplies (a new class called half-forward flyback), along with speakers for professional audio sound reinforcement.
- Mar '96 to Dec '97: ProSide Inc. Designed and acquired funding for a novel architecture that fuses SIMD with SPMD. Targeted at 3D graphics, was also a general "loop accelerator" that appeared as smart-memory. Developed base programming language and tools.
- Jun '94 to Jan '96: During this period, engaged in multiple projects. Designed, built, and programmed a robotics platform, based on 68HC11 microcontroller, that was employed in modern dances by the "run for your life, it's a dance company" theater troupe. Also, designed, wire-wrapped, and coded Verilog for an FPGA based oscilloscope that displayed output on TV screen, and cost \$40 in parts and materials.
- Designed and built an oscilloscope that used lasers and servo mounted mirrors to project signal traces on 20 ft size screens or walls. Implemented a stack-based processor using TTL parts and wirewrap.

PERSONAL REFERENCES

These persons are familiar with my professional qualifications and my character:
Will be provided post-interview.