

**WEB**

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ron2015schmitt.github.io  
 github.com/ron2015schmitt  
 npmjs.com/~ron2015schmitt

**SOFTWARE DEVELOPMENT EXPERIENCE**

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**Languages**

- C/C++
- JavaScript (ES2018)
- Java
- Python
- Fortran
- Matlab
- Mathematica

**OS Platforms**

- Linux
- Windows
- VirtualBox
- VMWare
- Docker

**Other**

- Node.js, Angular
- SQL, MongoDB
- Git, VS Code

**FULL WORK HISTORY**

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Credit Suisse <b>Analytics Developer</b>	New York, NY 1/2020 - 10/2021	AFCO Systems Development <b>Engineering Consultant*</b>	Farmingdale, NY 1/2004 - 3/2007
Arrakis Photonics <b>Lead Engineer</b>	Brooklyn, NY 5/2018 - 8/2018	Fonar <b>Engineering Consultant*</b>	Farmingdale, NY 2/2004 - 10/2005
North Atlantic Industries <b>Senior Principal Engineer</b>	Bohemia, NY 10/2016 - 4/2018	Mini-Circuits Laboratories <b>Technical Writer*</b>	Brooklyn, NY 1/2004 - 4/2004
SiCore <b>Engineering Consultant</b>	Farmingdale, NY 2/2014 - 9/2016	SRD Corporation <b>RF/Microwave Electronics Consultant*</b>	Orono, ME 7/2002 - 4/2003
Columbia University <b>Adjunct Professor*</b>	New York, NY 2008 - 2015	<b>Director of Electrical Engineering</b> <b>Senior Engineer</b>	10/1999 - 8/2001 3/1999 - 10/1999
Credit Suisse <b>Analytics Developer</b>	New York, NY 3/2010 - 2/2013	Nortel Networks <b>Senior Design Engineer</b> <b>Design Engineer</b>	Research Triangle Park, NC 2/1995 - 1/1999 5/1992 - 2/1995
The Courant Institute <b>Post-doctoral Research Fellow</b>	New York, NY 1/2008 - 3/2010	Instruments Systems <b>Electrical Engineering Intern</b>	Farmingdale, NY Summer 1990, 1991
Columbia University <b>Ph.D. Student / Research Assistant</b>	New York, NY 9/2001 - 12/2007		

**EDUCATION**

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*Postdoc* **New York University / Courant Institute of Mathematical Studies**  
 Dept. of Mathematics

*PhD & MPhI* **Columbia University** · GPA 4.0/4.0  
 Dept. Applied Physics And Applied Mathematics

*MSE* **University of Pennsylvania** · GPA 3.7/4.0  
 Dept. Electrical and Computer Engineering

*BS* **Cornell University** · GPA 3.4/4.0  
 Dept. Electrical Engineering

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\* Part-time position.

**Credit Suisse** Raleigh, NC**Analytics Developer**

01/2020 – 10/2021

- Senior developer for team tasked with rewriting Locus Analytics Platform for the Web/Chrome using modern JavaScript, ES2018.
- Implemented all of the numerical calculations for MBS Live as well as the historical charts.
- Developed data manager for handling all of the live ticking calculations, numbering over 8,000, including the ability for users to override model data and pricing data.

**Arrakis Photonics** ([www.arrakisphotonics.com](http://www.arrakisphotonics.com)) Brooklyn, NY**Principal Engineer**

05/2018-08/2018

- Technical lead for photonics start-up company
- Designed photonics circuit for 2x2 unitary matrix multiply

**North Atlantic Industries** Bohemia, NY**Senior Principal Engineer**

10/2016-04/2018

- Reviewed schematic and layout for over 75 PCB designs:
  - high speed digital, including SERDES up to 6Gbps
  - mixed signal
  - switch mode power supplies
- Introduced use of electromagnetic field simulations for Signal Integrity / Power Integrity / Electromagnetic Integrity (SI/PI/EMI)
- Specified purchase of Ansys SIWave and Maxwell software
- Performed simulations using Ansys SIWave
- Performed circuit simulations using LTSpice and Ansys Nexxim
- Performed transformer design using Ansys Maxwell and PExprt

**SiCore Technologies** Farmingdale, NY**Principal Engineer**

02/2014-09/2016

- Designed and implemented a SATA Host Mediator/Firewall in Verilog (Xilinx Kintex-7)
- Hardware debugging including signal/power Integrity and EMC
  - "Shield" Card  
Debugged and solved 100Gbps Ethernet issue (power integrity was the problem)  
Worked with layout engineer to rework the layout for power integrity / EMC  
New layout passed EMC certification
  - "NetFPGA" Card  
Debugged and solved intermittent FPGA bug (power integrity was the problem)  
Temporary fix is to use a heatsink to reduce the FPGA temperature  
Debugging intermittent bit errors on 3Gbps SATA link (issue identified as excessive phase noise on clock)  
Preparing for compliance testing to exactly quantify  
New design is underway

**Columbia University** New York, NY**Adjunct Professor**

01/2008-12/2015

- Department of Applied Physics and Applied Mathematics
- Periodically taught Principles of Applied Mathematics (APMA4001) on a part-time basis

**Credit Suisse** New York, NY**Analytics Developer**

03/2010 - 02/2013

- Developed analytics for the Locus platform, ranked in top three of fixed-income analytic tools by Institutional Investor in 2012.
- Created MBSLive analytic. With 500+ regular users, it has become the most popular analytic in Locus by a factor of 4.5.
- Wrote 32,000 lines of code in Java and JavaScript as sole developer of MBS Live.
- Engaged with marketing, sales, traders, and research as part of development process for MBSLive and other analytics.
- Acquired analytic experience with securitized products, rates, and credit derivatives.

**Courant Institute of Mathematical Sciences** New York University, New York, NY**Postdoctoral Fellow**

01/2008 - 03/2010

[U.S. Department of Energy Fusion Energy Sciences](#) Fellowship Award

- Extended the M3D code to compute magnetohydrodynamic equilibria with subsonic and transonic flow, creating the first such code to include separatrix geometry.
- Numerical study of subsonic and transonic flows in tokamak plasmas in separatrix geometry. Wrote free-boundary PDE solver in Matlab to investigate transonic flow behavior in the hyperbolic regime.

**Columbia University** New York, NY

**Research Assistant** (Advisor: [Allen Boozer](#), recipient of the 2010 [Alfvén Prize in Plasma Physics](#)) 06/2002 - 12/2007  
Department of Applied Physics and Applied Mathematics

- Researched, invented, and implemented mathematical methods (using C++ on LINUX) to invert the Biot-Savart integral between two toroidal surfaces.
- Developed numerical library, written with C++ templates providing an easy-to-read syntax, similar to Matlab.
- Performed 2D and 3D data analysis in Matlab.

**Teaching Assistant** (Linear Algebra, Principles of Applied Mathematics)  
Department of Applied Physics and Applied Mathematics

09/2001 - 05/2002

- Graded homeworks and assisted students during office hours: Linear Algebra, Principles of Applied Math

**AFCO Systems Development** Melville, NY**Consultant**

01/2004 - 03/2007

- Worked part-time as a consultant while pursuing Ph.D. at Columbia University.
- Reverse-engineered and wrote a report describing the operation of all the electronics of an electrosurgical system and designed architecture of modernized replacement system.
- Designed digital electronics for network-enabled data center power system monitors and power strips.
- EMC and safety compliance consulting
- High-speed electronics layout consulting and design.
- Specified components for design.
- Specified placement and routing guidelines for PCB layout.

**Fonar Corporation** Farmingdale, NY**Consultant**

02/2004 - 10/2005

- Worked part-time as a consultant while pursuing Ph.D. at Columbia University.
- Redesigned entire analog front-end (amplifiers and down-conversion) of MRI medical system.
- Specified components for design.
- Specified placement and routing guidelines for PCB layout.

**Minicircuits** Brooklyn, NY**Technical Writer**

01/2004 - 04/2004

- Worked part-time while pursuing Ph.D. at Columbia University.
- Wrote product releases and application notes for RF and microwave components.

**Sensor Research and Development Corporation** Orono, ME**Consultant**

07/2002 - 04/2003

- Worked part-time as a consultant while pursuing Ph.D. at Columbia University.
- Design of RF/microwave circuits.
- Computer simulation of RF circuits.

**Sensor Research and Development Corporation** Orono, ME**Director of Electrical Engineering**

10/1999 - 08/2001

- Managed a six person group, responsible for all research and prototype electronics design, layout, PCB milling, assembly, and testing.
- Served as senior consultant for design projects and as a mentor for the younger engineers.

Senior Engineer

03/1999 - 10/1999

Major projects and responsibilities:

- Designed measurement equipment for support of metal oxide and acoustic wave sensors.
- Design projects included PID heater control, frequency counting and detection, VHF and UHF oscillator design, RF mixers, filters (ranging from audio frequencies to microwave frequencies), low-noise amplifiers, and high-impedance measurements.
- Specified components, performed schematic capture and physical (PCB) layout.

**Nortel Networks** Research Triangle Park, NC**Hardware Design Engineer**

05/1992 - 01/1999

- Developed real-time audio signal processing algorithms for real-time applications using C and assembly language.
- Designed embedded systems for network and telecommunications equipment. Major projects and responsibilities:
  - Project leader for 3 person hardware design project  
Responsible for overseeing design, layout, EMC testing, Product Integrity testing, and prototype manufacturing. Design of embedded microprocessor system for SS7 protocol communications. Design included redundant ethernet links, 25 MHz 80186 processor with SRAM and Flash memory, HDLC controller and RS-449 interface, distributed clocking, FPGA, and two CPLDs programmed in Verilog.
  - Project leader for 4 person hardware design project  
Responsible for overseeing design, layout, EMC testing, Product Integrity testing, and prototype manufacturing. Design of embedded microprocessor system for SS7 protocol communications. Design included PCI bus, fast (100 MHz) ethernet, 50 MHz PowerPC processor with DRAM and Flash memory, three CPLDs in Verilog.
  - Designed and implemented DSP system for 24-channel voice network for maintenance of SONET fiber optic ring. Functions included call cross-connect, adaptive 10-way conferencing, DTMF tone detection and generation, call progress tone detection and generation, and digital signaling.
  - DSP and analog design for testing telephones, coin phones, and line cards. DSP and analog design for DMTF test equipment. DSP design of audio signal processing demonstration equipment.

**Instrument Systems** Farmingdale, NY**Real-time Software Design Engineer**

- Developed real-time signal processing software for Tracking and Data Relay Satellite (TDRS) ground station and Air Force digital communications equipment.