Tom Christiansen

tomchr@gmail.com
http://www.neurochrome.com

PROFILE

A self-driven entrepreneur, inventor, leader, and designer of several productized board level and integrated analog circuits with industry-leading performance. Employed in the field since 1991.

EXPERIENCE

OWNER, CIRCUIT DESIGN ENGINEER, PRECISION AUDIO CIRCUITS
Neurochrome : : Audio, Federal Way, WA & Calgary, AB; Canada *2010~Present*

- Precision audio circuit and layout design. Marketing. Customer service. Web development.
- Developed and productized semiconductor-based series of class AB audio power amplifier products offering world class performance.
- Productized high-end class A vacuum tube audio circuits, high voltage regulators, and switch-mode filament supply regulators.
- Performed audio circuit design, prototyping, PCB layout optimized for signal integrity, lab testing, documentation, marketing, sales, and customer service.
- Successfully consulted inexperienced customer in building a high-end vacuum tube based amplifier.
- Drove business to profit within one year.

SENIOR ELECTRICAL ENGINEER, PRECISION ANALOG CIRCUIT DESIGN
Texas Instruments (Formerly: National Semiconductor), Federal Way, WA *2011~2015*

- Implementing fully differential crystal oscillator with industry-leading phase noise performance.
- Design Team Lead on a low-cost, all-CMOS, 3 GHz PLL product. Collaborating with applications engineer on product definition. Designing frequency dividers, prescalers, and analog biasing blocks.
- Developing ultra low noise voltage regulators and VCO biasing circuits with prescribed temperature coefficients programmable by metal options for use in the LMX2581 PLL/VCO product.
- Inventing novel circuit for reliable detection of the loss of frequency lock in a PLL.
- Led the development of an analog delay circuit with infinitesimal delay steps. Noise floor improved by 25 dB over currently productized implementation. Managing intern implementing the circuit.

SENIOR ELECTRICAL ENGINEER, PRECISION ANALOG CIRCUIT DESIGN
National Semiconductor (Acquired by Texas Instruments in 2011), Federal Way, WA *2005~2011*

- Design Team Lead on the LMP2021 precision op-amp achieving the best noise performance in the industry for zero-drift op-amps.
- Design Team Lead on test chip exploring new VCO topologies. Mentoring recent college graduate who developed into an independent VCO designer within six months.
- Design Lead increasing the maximum operating frequency of the LMK01000 clock distribution chip by 30 % for a key customer by changing only one low-cost layout mask.
- Co-inventing, implementing patented circuit for use in the LMK04800 frequency holdover mode achieving a holdover frequency accuracy better than ±1 ppm in the customer's circuit.
- Implementing crystal oscillator achieving industry-leading phase noise performance for the LMK04000 precision clock conditioner, reducing the customer's solution cost tenfold.
- Design Lead on an LMK04000 derivative, successfully collaborating with the Packaging Technology Group to implement a fully monolithic clock generation solution in a custom package.
- Collaborating with applications engineer on customer evaluation board layout achieving a 15 % improvement in crystal oscillator tuning range.
- Consulting on customer evaluation board, product characterization board layouts.
- Implementing test scripts reducing the man hours needed for IC characterization at least tenfold and allowing multiple tests to be performed in parallel.

PREDOCTORAL LECTURER, RESEARCH ASSISTANT
University of Washington, Seattle, WA *1999~2005*

- Performed lesson planning, taught capstone class of 35 college seniors analog circuit design using op-amps. Managed Teaching Assistant.
- Design, PCB layout, firmware development, and test of high voltage electronics capable of driving a capacitive load at high slew rates. Circuit is in production and used in the medical field.
- Design and PCB layout of sensor system performing synchronous detection of nA~µA currents.
- Led Power Systems Group of three students, one faculty for a nano-satellite to be deployed by NASA. Designed and implemented 3 kV switch-mode power supply for the thrusters on the satellite.
- Taught and supervised laboratory sessions for senior-level class on switch-mode power supply design. Taught design and practical implementation of magnetic components.

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MILITARY SERVICE, ARMY
Sjællandske Livregiment, Slagelse, Denmark *1995~1999*
- Coordinated night operations medical evacuations. Deployed 250 soldiers, special forces, and weaponry to Kosovo. Tank maintenance and repair.

ELECTRONICS TECHNICIAN
Køge Gymnasium, Køge, Denmark 1991~1995
- Repaired, implemented equipment used in physics and chemistry labs. Managed computer networks.

VOLUNTEER LEADERSHIP
Rainier Hockey League, Tacoma, WA *2006~2015*
- Team Manager, Captain of two adult ice hockey teams. Solved inter-personal conflicts, handled league politics. Goalie Coach for Tacoma Tomahawks youth ice hockey team.

Scout Ship Propeller, Seattle, WA *2001~2004*
- Captain, Navigator of $1.5M, 65-foot Sea Scout power vessel with 16-person crew, carrying up to 49 passengers. Led 10-day cruises in Canadian and US waters with youth crew as well as all-adult crew.

PUBLICATIONS

- *Apparatus and Method to Hold PLL Output Frequency When Input Clock is Lost*
  Benyong Zhang, Tom Christiansen, Chris Schell, US Patent no. 8446193, 2013.
- *Crystal Based Oscillator Design with the LMK04000 Family*
  James Catt, Tom Christiansen, National Semiconductor Application Note AN-1939, 2009.

EDUCATION

UNIVERSITY OF CALGARY
Calgary, AB; Canada – Bachelor of Arts in Psychology (Honours), 2018 (exp.)

UNIVERSITY OF WASHINGTON
Tacoma, WA — Non-matriculated Student, 2013. GPA 3.90/4.00
Introduction to Psychology, Human Cognition, Managing Organizations.

IEEE, COMPUTER SOCIETY
Managing People, Applying Leadership Principles courses, 2010.

UNIVERSITY OF WASHINGTON
Seattle, WA — Master of Science in Electrical Engineering, 2002. GPA 3.76/4.00.
Thesis: “Conductivity Imaging System”.
Specialty: Devices & MEMS. Passed Ph.D. qualifying exam.

ENGINEERING COLLEGE OF COPENHAGEN
Ballerup, Denmark — Bachelor of Science in Electrical Engineering (Honours), 1999.
Final project: “500 W Switch-Mode Power Supply for Audio Amplifier”

LANGUAGES

English (fully fluent), Danish (native).

INTERESTS

Audio circuit design. Electronic test equipment repair. Arc welding. Photography with recognition at art contests. Psychology, specifically, transactional analysis, personality types, human cognition and their application in leadership situations.