Victor K. Kolesnichenko, Ph.D., P.E.

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Professional Summary:

A hands-on **Director of Electrical Engineering** with extensive experience in product conceptualization, design, development, and certification to ANSI and IEC Standards across many industries including the following:

- High voltage (30kV), high temperature stability (<20ppm/Deg.C) power supplies for TOF mass-spectrometers in biotechnology
- AC power meters and AMR Systems for utility industry including DSP experience using state-of-the-art devices
- Electrical / electronic and electromechanical control systems for semiconductor equipment
- Digital / analog design of board level electronics for instruments, measurement and telecom applications
- Electronics for automotive engine controls including sensors and high voltage (50kV) devices
- High performance (speed, accuracy) electronics for scientific instruments, specifically - an Electron Spectrometer

Two patents for personal designs in analog electronics, tens of completed and certified product designs including digital and microprocessor-based, and more than 20 articles in collections of scientific-research works and journals.

Employment History:

01/04 - present, **Principal,** California Consulting, San Jose, CA

- Analyzed schematic of a mass spectrometer, proposed, designed, and implemented extremely stable high voltage power supplies
- Designed a 100,000 Ampere Current Pulse Generator for a local test laboratory.
- Designed a low cost ($25), microcontroller-based, solid state electrical meter - Data Acquisition System

10/98 to 12/03, **Director of Advanced Development**, Metering Technology, Scotts Valley, CA

Managed Hardware Department (three senior-level engineers, test engineer, and two technicians) and defined technical policy of the company. Actively participated in all stages of mixed-signal, analog, and digital design.

- Planned and led new product design and development. Presented plans to the Board of Directors.
- Performed administrative duties including performance reviews.
- Led the hardware department in the design and certification of the new generation of high accuracy meters using 24-bit ADC-DSP chips. These meters and the accompanying Master Meters are the base of the citywide Automated Meter Reading system (AMR) for data collection, billing, and load regulation.
- Provided accelerated certification (ANSI, IEC, UL, CE) process of the new meters by personal participation and by designing unique test equipment, such as 12,000A current surge generator, 12kV pulse generator, and a recloser.

As a result, the company sold thousands of meters all over the world: Italy, New Zealand, Australia, Thailand, China, and USA.

Principal Engineer, (10/98 - 04/00)

- Proposed, designed and established a Document Control System, including Product Development Process Standard, Part Numbering Standard and other company standards, which significantly improved product development process.
- Proposed, designed and certified (ANSI and IEC) several Electrical Power Meters with communication through power line carrier (ASK, FSK), radio (915MHz FHSS), Smart Card (125kHz), and modem.

05/98 - 10/98, **EE Consultant**, Novellus Systems, San Jose, CA

- Designed and developed a Temperature Control System with eight control zones, 24 monitoring points for a CVD machine. The system greatly improved repeatability of CVD process.
- Provided schematics, BOM, and detailed description of the system.

11/97 - 04/98, **EE Consultant**, Applied Materials, Santa Clara, CA

- Conducted development of the new, 300mm EPI System, by providing documentation, troubleshooting, testing, modification, and design analysis. Found and resolved a grounding problem on the system level.
- Wrote and implemented Rework Procedures and Test Procedures of PCBAs for the Assembly House.
- Redesigned two mixed-signal PCBAs using ACCEL and AutoCAD (Prepared packages for ECO).
- Analyzed electrical schematics of several PCB modules, offered functional and safety improvements.

03/97 - 11/97, **Principal Electrical Engineer**, Tru-Si Technologies, Sunnyvale, CA

- Held a key role in system architecture and functional requirements specification of the new machine.
- Designed all functional (Visio) and electrical (OrCAD) schematics for Atmospheric-Plasma-Etching Machine.
- Established the system for document control (including part numbering) and design tracking.
- Led and completed four subsystem-level projects including documentation (from BOM to Test Procedure).
- Successfully managed two engineers, two technicians, and an outsource contractor in design and prototyping.

09/96 - 03/97, **Engineering Manager**, Neilsen-Kuljian, Mountain View, CA

- Managed a team of S/W, EE and Mechanical engineers: specified tasks, held reviews.
- Redesigned, developed, released, and ULed two versions of RISC-microcontroller-based devices for real-time measurements of current, voltage, kW, kWh, kVA in Three Phase Systems.
- Developed, released, and ULed Ground Fault Sensor.
- Introduced company's products at the 1997 Air Conditioning, Heating, and Refrigeration (AHR) Expo in Philadelphia.

5/93 to 8/96 Telecom Solutions, San Jose, CA as follows:

Design Engineer 3 (5/95 - 8/96)

- Designed and released two (SMT and through-hole) output cards (Z180, 256 kb RAM, 512 kb ROM, DS2181, two FPGAs) for paired (hot-spare) or single-card operation, which provide ten E1 (Europe Telecom) or analog outputs.
- Developed and implemented hybrid-module switching power supply. Designed PLDs 22V10 using CUPL.

Design Engineer 2 (5/94 - 5/95)

- Designed (with ViewLogic) and implemented five FPGAs (Actel 1020B) improving performance of input and output (T1 and E1) cards (CI-M, TOT-M, TOCA, TO-EA) in the new system - Integrated Local Primary Reference. Provided Hardware and Software integration and engineering testing of the whole system containing LORAN-C (100kHz) and GPS (2.4GHz) receivers, two Rubidium oscillators and up to ten output cards.

Design Engineer (5/93 - 5/94)

- Researched EMI of the new Digital Clock Distributor and prepared the system for FCC and UL test.
- Designed and implemented The Multi-Notch Filter Module for suppression of side-frequencies and improving performance of the LORAN Signal Receiver (uP-68340 and DSP-56001). Wrote a program in C++ for solving systems of differential equations, based on Runge-Kutta method, and calculated LORAN-Signal distortions in different filters. Results were used in the DSP's firmware.

04/92 - 05/93, **Engineering Consultant**, Treasure Industries, San Francisco, CA
Designed, prototyped, and released several voice- and light-activated toys and badges.

12/87 - 09/91, **Associate Professor**, Industrial Institute, Kherson, USSR
Lectured in Applied Mathematics, Theory of Automatic Control, Design of Experiments for Industrial Applications, led graduate students' Diploma Projects in Electrical Engineering.
Researched the needs of the oil-processing factory. Designed, implemented and maintained the computer-based system for remote high precision (s<0.01%) measurements of oil-product levels in storage tanks. This system saved 23,000 man-hours per year.
Participated in design of a multi-microcomputer system for adaptive telescope control. Performed main hardware work in creating the system with six peripheral 16-bit microcomputers and designed high-voltage D/A converters for piezoelectric actuators.

03/84 - 08/87, **Group Leader**, Institute of Physics & Technology of the Academy of Sciences, Izhevsk, USSR

- Came up with the idea of inductive heating of the samples in the vacuum camera of Electron Spectrometer. Designed and implemented a powerful (1kW) RF-Generator for fast heating (hundred times faster than regular resistive heating) which improved performance of the Electron Spectrometer.
- Designed a high frequency amplifier-discriminator and ECL-counter for capturing secondary electrons from the sample to increase sensitivity and resolution of the Electron Spectrometer.
- Applied a method of Design Of Experiments for tuning the Electron Spectrometer and thus shortened its maintenance time.

11/80 - 02/84, **Electronic Research Engineer**, Moscow State University, USSR (Graduate School)

- Applied a method of Design Of Experiments for calculating a mathematical model of optimal control of ignition advance. Designed and implemented an Electronic Control System for Internal Combustion Engine. The system reduced fuel consumption by 11 percent and decreased exhaust gas emissions by 13 percent.
- Received two patents of inventions and introduced this system at the Exhibition of National Economy's Achievements of the USSR in Moscow. Wrote and successfully (12:0) defended a PhD dissertation.

09/79 - 10/80, **Chief Metrologist**, Udmurt State University, Izhevsk, USSR

- Provided metrological support for all research works conducted in the university.

EDUCATION:	07/95 - 10/95	**P.E**. Electrical Engineering, Santa Clara University, CA, Certificate #:E15409
	11/80 - 02/84	**Ph.D**., Electrical Engineering, Moscow State University, USSR
	09/71 - 06/76	**M.S**., Computer Engineering, Izhevsk State University, USSR

Additional coursework:	08/99 - 08/99	Finance and Accounting for Nonfinancial Executives, AMA, San Francisco, CA
	11/98 - 11/98	LONWorks Technology, Echelon Co., Palo Alto, CA
	07/96 - 07/96	ATM: Networking Applications, American Research Group, San Jose
	02/96 - 05/96	Certificate in Digital Signal Processing II (Echo canceller), UC Berkeley
	06/94 - 09/94	Certificate in C-Language Design of Digital Filters from UCSC, Santa Clara

TOOLS:

Software: OrCAD, CUPL, ViewLogic, ABEL, ACCEL, IVEX, Futurenet, DRSpice, MATLAB, FORTRAN, PLC Step-7, C, MPASM, MicroSim, Microsoft Office, Microsoft Project, AutoCAD, Electronics Workbench

Hardware: Electron and Mass-Spectrometers, Logic, Spectrum, and Protocol Analyzers, PCs, Embedded Controllers, DAQs, PLCs, Switching Power Supplies: 80-300VAC, RF Transceivers, Electrical Meters, Ignition Systems, High Voltage/Current Pulse Generators