

## RESUME OF TUFAN COSKUN KARALAR

5915 Avila, #B • El Cerrito, CA 94530 • (510) 559 8912 • tufan@eecs.berkeley.edu

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**OBJECTIVE**            An engineering intern position in which I can apply my education and knowledge, to the system design and implementation of analog or digital integrated circuits.

### TOPICS OF SPECIAL INTEREST

- Implementation of Baseband/IF Communication Blocks: Analog, Digital filters, ADC/DAC, Baseband/IF Amplifiers, NCO, Digital arithmetic blocks, PLLs, DLLs, Modulators, Synchronizers.
- Standard cell library based ASIC design. Realization of SOC's
- Mixed signal circuit design.
- Hardware implementation for protocol processing, digital interfaces.

### EDUCATION

<b>Degree:</b>	<b>University of California, Berkeley, CA</b> PhD in Electrical Engineering, expected in May 2005	2002 - Present
	<b>University of California, Berkeley, CA</b> M.S degree in Electrical Engineering	2000 - 2002
	<b>University of Michigan, Ann Arbor, MI</b> B.S degree in Electrical Engineering, with highest distinction	1998 - 2000

**Projects:**            Participated in the physical (RTL to layout) implementation of a 3Million transistor Digital IC. Worked with Avanti Astro / Synopsys PhyC / Synopsys Nanosim. Added custom cells to the standard cell library. Designed a multi supply power grid. Adapted Synopsys Scheme scripts to perform floor planning, placement, routing, ECO changes. Chip was taped out in January 2004 in 0.13 $\mu$  CMOS process

Designed and implemented the locationing block of a Digital sensor IC that also hosts the Link/Network layers and the receiver baseband portion. This locationing block can perform location calculations via LS Matrix computations as well as package encoding and decoding. It is designed in Matlab Simulink, implemented in VHDL.

Designed an acoustic anemometer application to measure airflow in indoor environments. Involves design and implementation of Digital filters, NCO's and control logic. Implemented the system on a Xilinx XC4000 series FPGA using Celoxica Handel-C (as M.S project).

Designed the Baseband transmitter of a 1.6 Mbps CDMA digital transceiver in 0.18 $\mu$  ST CMOS technology.

Designed a 16-bit RISC general-purpose micro controller in 1.5 $\mu$  SCMOS technology. Features were added to support functioning as the computing unit for a building entrance security system.

**Relevant Courses:**    VLSI Data Conversion Systems • Analog and Digital Advanced Circuit Design • VLSI Signal Processing Architectures • Advanced Digital Communications • VLSI System Design • Analog and Digital Signal Processing • Digital Logic Design • Semiconductor Devices • Stochastic processes and Systems • Adaptive algorithms

**Honors:**            2<sup>nd</sup> place in ISSCC/DAC Student Design Contest 2003, as co-author of paper "Low-Energy Chip-Set for Wireless Intercom" in operational category.

#### **University of Michigan**

EECS Scholar • Angell Scholar • Arthur B. Singleton First Year Student Prize • William J. Branstrom Freshman Prize • Dean's List (During all terms)

**Other Universities**

Regents' Fellowship, UC Berkeley • College of Engineering Fellowship, Stanford University • S.M.Kang IC fellowship, University of Illinois Urbana Champaign.

**GPA:** 3.83/ 4.00

**EXPERIENCE****Analog Devices Incorporated, San Jose**

6/2003-8-2003

Analog Design Intern

Designed and implemented a bipolar differential operational amplifier with a 1.6GHz bandwidth, high linearity and low noise. The amplifier was designed as a driver for a 14b 80MSPS ADC. This amplifier improved the speed by 5x, linearity (SFDR) by 30dB and RIT noise by 3x from the previous generation ADC drivers.

**University of California, Berkeley**

08/2000-present

Graduate Student Researcher

**University of California, Berkeley**

01/2002-05/2002

Teaching Assistant for EE141 Digital Integrated Circuits course.

**University of Michigan, Ann Arbor, MI**

04/1999-07/1999

Worked as research assistant. I implemented LabView / DAQ applications to test the output of a sigma delta modulator employed in a Micro Electro Mechanical System.

**COMPUTER SKILLS**

**Analog Circuit Design:** HSpice • Spectre • Eldo • Adice (ADI Circuit Emulator) • Cadence Virtuoso • Calibre • MicroMagic Design tools

**Digital Circuit Design:** Avant! Astro, Apollo, Milkyway • Modelsim • Verilog HDL • VHDL • Synopsys PhysicalCompiler / DesignCompiler / Module Compiler. • Formality • Celoxica Handel-C

**Operating Systems:** Unix/Solaris3.x • Windows • Macintosh • MS-Dos

**Programming:** Matlab/Simulink • Synopsys Scheme • C & C++ • Java • LabView. • Assembly (Motorola 68000) • HTML

**ACTIVITIES**

IEEE Student member • UC Berkeley Space Assignments and Capital Improvements Committee graduate student member • Active member in HKN Honor Society • Active member of TBP Honor Society. • Board member of Berkeley Turkish Student Association

**REFERENCES**

Available upon request.