TIAGO OLIVEIRA WEBER

655 Appel Street, Apt. 503
Santa Maria, RS, Brazil

+55 11 9-4250-5542
tiago.oliveira.weber@gmail.com

EDUCATION

Ph.D. Candidate, Electrical Engineering — Expected June 2015
Polytechnic School, University of São Paulo — São Paulo, Brazil

- Dissertation Title (translated from Portuguese): Synthesis of analog integrated circuits in system-level and circuit-level using modern optimization methods
- Research Synopsis: analog integrated circuits are very important in modern electronic systems, performing tasks such as analog to digital conversion, digital to analog conversion, radio frequency communication, filtering and others. The design of this type of circuit requires attending to several performance specifications, being usually performed only by experienced designers. We developed techniques for the design of circuit-level and system-level analog circuits. As the optimization core, we proposed an algorithm based on Simulated Annealing while considering multiobjective information through the use of a crossover operator. An hybrid algorithm combining the proposed algorithm with Particle Swarm Optimization was created to properly explore the Pareto front. Tests indicated the algorithms are efficient for the design of analog circuits as well as outperform many other derivative-free algorithms when applied to purely mathematical problems.

B.S. in Electrical Engineering — Jan. 2010
Federal University of Santa Maria — Santa Maria, Brazil

- Undergraduate Thesis Title (translated from Portuguese): Tool for integrated circuit synthesis with an educational approach
- Modules included:
  - Analog Integrated Circuits Design
  - Programmable Logic Systems
  - Data Communication
  - Special Topics in Microelectronics
  - Conception of Integrated Circuits
  - Signal Processing

RESEARCH INTERESTS

- Analog Design Automation
- Artificial Intelligence
- Optimization
- Computational Neuroscience
- Integrated Circuits
- System Design

PUBLICATIONS

- Journal publications
  - **WEBER, T.O.**; NOIJE, W.A.M.V. Analog Circuit Synthesis Performing Fast Pareto Frontier Exploration and Analysis Through 3D Graphs. *Analog Integrated Circuits and Signal Processing*, Springer US, v. 73, n. 3, p. 861-871, ISSN 0925-1030, 2012;

- **WEBER, T.O.**; NOIJE, W.A.M.V. Multi-Objective Design of Analog Integrated Circuits using Simulated Annealing with Crossover Operator and Weight Adjusting. *JICS. Journal of Integrated Circuits and Systems*, v. 7, n. 1, p. 1-9, ISSN 1807-1953, 2012.

- Book chapter
  - **WEBER, T.O.**; NOIJE, W.A.M.V. Design of Analog Integrated Circuits using Simulated Annealing/Quenching with Crossovers and Particle Swarm Optimization. *Simulated Annealing - Advances, Applications and Hybridizations*, v. 1, p. 219-244, Ed. InTech, ISBN 978-953-51-0710-1, 2012.

- Conference publications
  - **WEBER, T.O.**; CHAPARRO, S.; NOIJE, W.A.M.V. Synthesis of a Narrow-band Low Noise Amplifier in a 180 nm CMOS Technology using Simulated Annealing with Crossover Operator. *In: Proceedings of the 26th Symposium on Integrated Circuits and Systems* p. 1-5, Curitiba, Brasil, 2013;
  - **WEBER, T.O.**; NOIJE, W.A.M.V. Analog Design Synthesis Performing Fast Pareto Frontier Exploration. *In: Proceedings of the 2nd IEEE Latin American Symposium on Circuits and Systems*, p. 62-66, ISBN 978-1-4244-9484-2, Bogotá, Colômbia, 2011;
  - **WEBER, T.O.**; NOIJE, W.A.M.V. Analog Design Synthesis Method Using Simulated Annealing and Particle Swarm Optimization. *In: Proceedings of the 24th Symposium on Integrated Circuits and Systems*, p. 85-90, ISBN 978-1-4503-0828-1, João Pessoa, Brasil, 2011.
  - **WEBER, T.O.**; RODRIGUES, C. R. Automatic LC Oscillator Systematic Design using Matlab and SPICE Interaction *Iberchip Workshop, XV*, Buenos Aires - Argentina, March 2009
  - HAYASAKA, H.; **WEBER, T. O.**; RODRIGUES, C. R. Oscilador LC à 2,4GHz Controlado por Tensão em Tecnologia AMI 05μm *Jornadas de Jóvenes Investigadores, XVI*, Montevideo - Uruguay, October 2008

WORK EXPERIENCE

Co-founder Jan. 2010 - Jan. 2014
Weevee Electronic Solutions LTDA., Santa Maria, RS, Brazil

- Designed and simulated analog and digital electronic circuits
- Performed tests and debug of electronic circuits
- Designed the layout of printed circuit boards (PCBs)
- Performed presentations to show product concepts to investors and clients

Trainee Sept. 2008 - May. 2009
Santa Maria Design House, Santa Maria, RS, Brazil

- Worked on the high-level development, implementation and mixed-signal simulation of a Low-Power Incremental Delta-Sigma Converter.

SKILLS

- **Programming:** MatLab/Octave, Perl, C, learning LISP
- **CAD Tools:**
  - **Electronic Design:** circuit simulators, layout tools for PCB design
  - **Integrated Circuit Design**: HSPICE (Synopsys), Virtuoso platform XL, Virtuoso Spectre Circuit Simulator, Assura DRC, Assura LVS (Cadence)
- **Electronic Laboratory Instruments:** Oscilloscopes, Function Generators, Power Supplies, Microcontroller Programmers

EXTENSION PROJECTS AND OTHER EXPERIENCES

PRO+E: Multidisciplinar Project of Integrated Actions to provide Engineering Solutions Jun. 2007 - Jan. 2008
Federal University of Santa Maria (UFSM), Santa Maria, Brazil

- Development of low-cost educational experiments for high school students using engineering knowledge

Real-Time Monitoring of Water Resources Using Wireless Sensor Networks Nov. 2006 - Sep. 2007
Federal University of Santa Maria (UFSM), Santa Maria, Brazil

- Embedded system research using WSN with the aim of monitoring Brazilian water resources

LANGUAGES

English: fluent
Portuguese: native speaker
Spanish: basic
Italian: basic

REFERENCES

Dr. Wilhelmus Adrianus Maria Van Noije, Professor
Polytechnic School
University of São Paulo
Av. Professor Luciano Guadalberto, 158, trav. 3
Cidade Universitária
05508-900 - São Paulo, SP - Brazil
noije@lsi.usp.br

Dr. Cesar Ramos Rodrigues, Professor
Department of Electromechanics and Power Systems
Federal University of Santa Maria
Campus da UFSM, Camobi
97105-900 - Santa Maria, RS - Brazil
cesar@ieee.org