

Chrystian de Sousa Guth

1 EXPERIENCE

1.1 PHILIPS (EINDHOVEN – NETHERLANDS)

1.1.1 C++ Software Engineer @ Image Guided Therapy Devices (Oct 2020 – Now)

- Development and improvement of Image Guided Therapy GUI applications

1.2 COMMUNICATION SECURITY GROUP (FLORIANÓPOLIS – BRAZIL)

1.2.1 Senior Software Engineer (May 2019 – Jun 2020)

- Development and deployment of the SIP UA library to several platforms (Windows, Android, iOS, Mac, Linux)
- Binding of the developed library to several languages (JavaScript, C#, Swift, Kotlin, C)
- Development and improvement of an Asterisk Channel driver, based on the developed UA library
- Extensive use of C, C++11, C++14, GIT, Python and TDD

1.2.2 Software Engineer (Sep 2017 – Apr 2019)

- Compliance to NIAP VoIP protection profile for Cellcrypt Classified (<https://www.niap-ccevs.org/Product/Compliant.cfm?PID=10929>)
- Development a SIP UA library for secure communication with audio and video using Modern C++ targeting Mac and Windows

1.3 CADENCE DESIGN SYSTEMS (CAMBRIDGE – UNITED KINGDOM)

1.3.1 Software Engineering Intern (Jan 2017 – Jul 2017)

- Improvement of some regression tests
- Runtime savings through change of a set of C++ calls to a low-level API, critical for both runtime and good optimization results

1.4 COMMUNICATION SECURITY GROUP (FLORIANÓPOLIS – BRAZIL)

1.4.1 Software Engineer (Sep 2016 – Dec 2016)

- Development of tools for secure online communication with audio and video using modern C++ and WebRTC

1.5 EMBEDDED COMPUTING LABORATORY - FEDERAL UNIVERSITY OF SANTA CATARINA (FLORIANÓPOLIS – BRAZIL)

1.5.1 Researcher on EDA & Physical Design (2014-2016)

- Research and development of algorithms for Timing-Driven Placement, Static Timing Analysis and Timing-Aware Power-Driven Placement
- Ophidian Project (<https://github.com/eclufsc/ophidian>)

1.5.2 Undergrad. Research Assistant (2011-2013)

- Research and development of algorithms for Static Timing Analysis and Gate Sizing

2 EDUCATION

2.1 FEDERAL UNIVERSITY OF SANTA CATARINA – FLORIANÓPOLIS – BRAZIL

2.1.1 Master's Degree in Computer Science (2014-2015)

- Dissertation - Exploiting Non-Critical Steiner Tree Branches for Post-Placement Timing Optimization
- Advisor - Prof. Dr. José Luís Almada Güntzel
Description – This work proposes and evaluates an incremental timing-driven placement (TDP) technique that moves a subset of cells to optimize the delay of the most critical interconnections in the circuit, while trying to preserve the initial placement quality. The technique explicitly models the interconnections as Steiner trees, which are able to capture information on the interconnection topologies in the final routing. The main contributions of this work were published in Proceedings of the IEEE/ACM International Conference on Computer-Aided Design (2015).

2.1.2 Bachelor's Degree in Computer Science (2010-2013)

3 COMPUTER SKILLS

- C++ - Modern C++, Conan, STL, Catch, Boost, OpenMP, Lemon, Qt, SFML, range-v3
- Programming - Test-Driven Development, Data-Oriented Design, Object-Oriented Programming, Autotools, CMake, QMake, gcc, clang
- Python – Matplotlib, Pandas, Scipy, NumPy, iPython Notebook, regex
- Project Management – Git, Github, Gitlab, Trello, SVN, Perforce, Travis-CI, Jira, Bamboo, CCMS
- Other – Linux, Latex, Inkscape (vector graphics), Typescript, JavaScript, PHP, Java, Node.js, Electron, NW.js

4 LANGUAGES

- Portuguese - Native Speaker
- English - Professional working experience

5 CONTESTS AND AWARDS

- ICCAD'15 – First Place in the Incremental Timing-Driven Placement (Problem C) Contest
- ICCAD'14 – Fifth Place in the Incremental Timing-Driven Placement (Problem B) Contest
- ISPD'13 – First Place in the Discrete Gate Sizing Contest

6 INTERESTS

- Programming – Open source, Mobile, Games
- Music – Electric Guitar, Music Production, Metal (Genre)
- Sports – Cycling, Martial Arts

7 PUBLICATIONS

- Tiago Fontana, Renan Netto, Vinicius Livramento, Chrystian Guth, Sheiny Almeida, Laércio Pilla, and José Luís Güntzel. How game engines can inspire eda tools development: A use case for an open-source physical design library. In *Proceedings of the 2017 ACM on International Symposium on Physical Design*, pages 25–31. ACM, 2017.
- Tiago Augusto Fontana, Sheiny Almeida, Renan Netto, Vinicius Livramento, Chrystian Guth, Laércio Pilla, and José Luís Güntzel. Exploiting cache locality to speedup register clustering. In *Proceedings of the 30th Symposium on Integrated Circuits and Systems Design: Chip on the Sands*, pages 191–197. ACM, 2017.
- Chrystian Guth, Vinicius Livramento, Renan Netto, Renan Fonseca, José Luís Güntzel, and Luiz Santos. Timing-driven placement based on dynamic net-weighting for efficient slack histogram compression. In *Proceedings of the 2015 Symposium on International Symposium on Physical Design*, pages 141–148. ACM, 2015.
- Vinicius Livramento, Chrystian Guth, Renan Netto, José Luís Güntzel, and Luiz CV dos Santos. Exploiting non-critical steiner tree branches for post-placement timing optimization. In *Proceedings of the IEEE/ACM International Conference on Computer-Aided Design*, pages 528–535. IEEE Press, 2015.
- Vinicius Livramento, Renan Netto, Chrystian Guth, José Luís Güntzel, and Luiz CV Dos Santos. Clock-tree-aware incremental timing-driven placement. *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 21(3):38, 2016.
- Vinicius dos S Livramento, Chrystian Guth, Jose Luis Guntzel, and Marcelo O Johann. Evaluating the impact of slew on delay and power of neighboring gates in discrete gate sizing. In *2012 IEEE 3rd Latin American Symposium on Circuits and Systems (LASCAS)*, pages 1–4. IEEE, 2012.
- Vinicius dos S Livramento, Chrystian Guth, José Luís Güntzel, and Marcelo O Johann. Lagrangian relaxation-based discrete gate sizing for leakage power minimization. In *2012 19th IEEE International Conference on Electronics, Circuits, and Systems (ICECS 2012)*, pages 468–471. IEEE, 2012.
- Vinicius S Livramento, Chrystian Guth, José Luís Güntzel, and Marcelo O Johann. Fast and efficient lagrangian relaxation-based discrete gate sizing. In *2013 Design, Automation & Test in Europe Conference & Exhibition (DATE)*, pages 1855–1860. IEEE, 2013.
- Vinicius S Livramento, Chrystian Guth, José Luís Güntzel, and Marcelo O Johann. A hybrid technique for discrete gate sizing based on lagrangian relaxation. *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 19(4):40, 2014.
- Renan Netto, Tiago Augusto Fontana, Sheiny Fabre, Bernardo Ferrari, Vinicius Livramento, Thiago Barbato, João Souto, Chrystian Guth, Laércio Pilla, and José Luís. Ophidian: an open-source library for physical design research and teaching.
- Renan Netto, Chrystian Guth, Vinicius Livramento, Marcio Castro, Laércio Lima Pilla, and José Luís Güntzel. Exploiting parallelism to speed up circuit legalization. In *2016 IEEE International Conference on Electronics, Circuits and Systems (ICECS)*, pages 624–627. IEEE, 2016.
- Renan Netto, Vinicius Livramento, Chrystian Guth, Luiz CV dos Santos, and José Luís Güntzel. Evaluating the impact of circuit legalization on incremental optimization techniques. In *Proceedings of the 29th Symposium on Integrated Circuits and Systems Design: Chip on the Mountains*, page 5. IEEE Press, 2016.
- Renan Netto, Vinicius Livramento, Chrystian Guth, Luiz CV dos Santos, and Jose Luis Guntzel. Speeding up incremental legalization with fast queries to multidimensional trees. In *2016 IEEE Computer Society Annual Symposium on VLSI (ISVLSI)*, pages 36–41. IEEE, 2016