

Rodrigo Tacla Saad

Ph.D. Engineer in System Dependability and High-Performance Computing

INFORMATION	Florianopolis, Santa Catarina, BRAZIL CV: http://www.linkedin.com/in/rodrigotaclasaad Homepage: https://rodrigotaclasaad.wordpress.com/	Mobile: +55 67 98114 0005 Email: rodrigo.tacla.saad@gmail.com Github: https://github.com/rtsaad/
SUMMARY	Ph.D. Engineer in High-Performance Computing and System Dependability with experience on the development of innovative products. Founder of Trekken (OTOMATA), an awarded-winning brazilian tech-based Startup specialized in reducing the number of deaths caused by aggressive drivers. Passionate about technology and the development of new tools. Strong knowledge of algorithms and data structures for parallel, distributed and cloud computing. Have 12 years experience in the development of scalable informatics systems, 8 years experience developing tools to verify mission-critical systems (formal verification), and five years experience executing projects that require high investments in P&D.	
RESEARCH INTERESTS	<ul style="list-style-type: none">• Scalable systems to reduce the number of deaths caused by aggressive drivers (70% of accidents are caused by human behavior such as cornering, aggressive maneuvers, etc);• High-performance computing for distributed and shared memory machines;• Analysis and definition of large informatic systems.	
SKILLS:	Entrepreneur \ Innovator \ Algorithms \ High Performance Computing \ Scalable Systems Programming: C, Python, Ruby, Javascript, Java (Android) and SML (MLton) Languages: Portuguese, French and English (TOEIC 890)	
PROJECTS	Trekken — (Play Store), (Web) <ul style="list-style-type: none">• Smartphone App to Identify Aggressive Drivers;• Award-winning App (InfoStart, Inovativa, Campus Party, PEGN) that already helped more than 5000 people to improve their driving skills with an average score of 4.6/5 at Play Store;• Co-founder, Product Manager, and lead developer.	Aug 2013 – <i>Present</i>
	Mercury — (Web), (GitHub) <ul style="list-style-type: none">• Open Source High-Performance Model Checker for complex systems (billion states);• Supports Reachability analysis and Local Sub-CTL Model Checking;• Developed during my Ph.D. in C language (26k lines of code);	Oct 2008 – <i>Present</i>
PROFESSIONAL EXPERIENCE	Trekken, www.trekken.com.br <i>Founder and Product Development</i>	Campo Grande, Brazil Aug 2013 – <i>Present</i>
	Description: Work focused on the development of a highly scalable cloud platform capable of collecting and analyzing sensor data (pattern recognition of time series) from smartphones in order to identify aggressive drivers. Results achieved: <ul style="list-style-type: none">• Implemented a high demand system architecture;• Analyze data from thousands of cars in real time. Tools: Rails, Java (Android), Javascript, Python, Node.js, REDIS, CouchDb (NOSQL), Map/Reduce (mrjob), Machine Learning(SciKit, TensorFlow), and Octave.	
	Universidade Federal de Santa Catarina, CNPQ <i>Postdoctoral Researcher-Junior (Petrobras)</i> <i>Postdoctoral Researcher-Junior (PDJ)</i>	Florianopolis, Brazil March 2018 – March 2019 Aug 2012 – Aug 2013
	Description: Formal Verification and Compliance Tests for Mission-Critical Industry. Work focused on proposing new methodologies and implementing new tools to verify Safety Instrumented Systems for the Oil Industry. Results achieved: <ul style="list-style-type: none">• Helped to formally verify complex system (billion states);• Development of a toolbox capable of black-box testing mission-critical systems within hours;• Managing a team of four trainee developers and two master students. Tools: Tools: Risk Analysis (HAZOP, LOPA), IEC Standards, Black-Box test, and Python.	

Laboratoire D'Analyse et D'Architecture des Systèmes, CNRS Toulouse, France
Ingénieur d'étude June 2008 – May 2012
Description: Worked with high-performance computing for Model Checking applications as part of the European project Topcased. Developed and implemented Mercury, a model checker written in C language for multi-core and multi-processors computers. Results achieved:

- Reduced the verification time from hours to minutes;
- Published a PhD. Thesis, 3 articles (IEEE and Springer) and 2 technical reports.

Tools: FIACRE, Petri Nets, Model Checking, C Language, Compilers (LEX and YAAC), Pthreads, and Python.

Laboratoire D'Analyse et D'Architecture des Systèmes, CNRS Toulouse, France
Internship - Master of Sciences Sep 2006 – Sep 2007
Description: Worked with formal verification and validation of embedded real-time systems as part of the Topcased Project. Part of the team that defined the first version of the Fiacre language.

- Developed the first compiler for the formal language Fiacre;
- Proposed methods to verify SysML and SDL models.

Tools: FIACRE, Petri Nets, SDL, SysML, Correct By Construction, SML, MLTon, LEX, and YAAC.

EDUCATION

Institut National des Sciences Appliquées de Toulouse Toulouse, France
Ph.D. in High-performance computing and System Dependability Oct 2008 – Dec 2011
Description: Study focused on the development of new algorithms to perform model checking techniques on shared memory multi-processors machines. Model Checking is a demanding activity in terms of computer resources. The main objective was to take benefit of recent advances on the hardware side to improve model checking algorithm performance. Computers with larger memory space, together with the multi-core technology, make feasible the verification of larger models, in a reasonable amount of time. The contributions of this thesis are not limited to the model checking domain, the algorithms and data structures proposed in this work are of interest for any application that performs graph exploration, cycle detection and probabilistic (or lossy) storage in parallel.

- Subject: Parallel Model Checking for Multiprocessor Architecture
 - Thesis [Presentation](#) (French) and [Manuscript](#) (English).
- Supported by the European project Topcased;
- Program committee member: ETR09 and ETR11;
- Invitations: AIRSYS2012 FAC2011 FAC2010 FAC2009;
- Publications: SPRINGER/ATVA2012 IEEE/ISPDC2011 IEEE/PDMC2010 EWDC2009 ETR09.

Université Paul Sabatier Toulouse, France
Universidade Federal de Santa Catarina Florianópolis, Brazil
Master of Science, Automation, Informatics and Decision Systems April 2006 – April 2008
Description: Master oriented to define a common formal verification chain between high-level languages (UML, SDL, SysML, etc) and mathematical formalisms (Petri Nets, Automaton, etc). Proposed and developed translation methods for different languages, such as SDL and SysML, towards Timed Petri Nets. Member of the team that defined the semantics of the [Fiacre](#) language, which was conceived to bridge the gap between high-level languages and mathematical formalisms.

- Average score: 3.88/4 Brazil — 16.5/20 (Mention “très bien”) France;
- Supported by the European project Topcased;

Universidade Federal de Santa Catarina Florianópolis, Brazil
B.Sc., Control and Automation Engineering Mar 2001 – Mar 2006

- Average score: 84.5 / 100