Pedro Valero

Personal Data

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Work Experience

September 2020 – Current
Meta (London, United Kingdom)
Product Engineer
Sing joining Meta, I have worked in three different teams with very different scope. At a high level, my main contributions to date are:

- Analyzed the user's behaviour when connecting a WhatsApp number to a Facebook page in order to identify blockers and address them.
- Developed, from scratch, the cross-app infrastructure to support discovery within the Affiliate program. The goal was to allow creators to discovery products and shops, as well as allow advertisers to discover creators to partner with.
- Led a workstream to investigate the issues that prevent sellers from having a good pixel setup and devised automated solutions to solve them.

July 2019 – October 2019
Facebook (Palo Alto, California)
Research Intern at the Data Compression Team
Built a prototype (in *C*) of a grammar-based compressor that achieved compression ratios comparable to the ones obtained with zstd.

September 2016 – September 2020
IMDEA Software Institute (Madrid, Spain)
PhD Student PhD Advisor: *Pierre Ganty*
My PhD is focused on Applications of Language Theory. The most relevant project I have worked on as part of my PhD, which let to an Internship at Meta, was the development of *zearch*, a tool for searching with regular expressions in compressed text which outperformed the state of the art technology. The details of this work were published at the *Data Compression Conference*.

September 2015 – May 2016
IMDEA Software Institute (Madrid, Spain)
Part-time Intern Manager: *Pierre Ganty*
Analysed different network protocols and whether they could be validated with parser generators for context-free languages. We developed a modular, robust, and efficient input validator for HTTP relying on context-free grammars and regular expressions.

June 2015 – September 2015
Max Planck Institute for Software Systems (Kaiserslautern, Germany)
Intern Manager: *Rupak Majumdar*
Designed a system to control a robot using by voice commands and gestures. The system was implemented and simulated with Robot Operative System.

June 2014 – May 2015
IMDEA Software Institute (Madrid, Spain)
Intern Manager: *Pierre Ganty*
Improved the infrastructure for testing and benchmarking mist, a safety checker for Petri Nets and extensions.

Software

HTTValidator — An input validator for HTTP messages that relies on recognizers for context-free and regular languages (implemented using Bison and Flex respectively) to perform the validation. *Publicly available on GitHub.*

Zearch — A tool for regular expression searching on grammar-compressed text (implemented in C). Publicly available on *GitHub*.

Programming Skills

Languages	**Advanced:** C, Hack, React, Python, SQL. **Medium**: C++, Java, Bash, Awk, JavaScript, PHP, HTML, CSS, LaTeX. **Basic**: R, Assembly, Lisp, Prolog.
Software	Linux, Sublime Text, Atom, Git, svn, mercurial, Zsh.

Publications

Fundamenta Informaticae 2021	A Congruence-Based Perspective on Finite Tree Automata *with Elena Gutiérrez and Pierre Ganty.*
TOCL 2021	Complete Abstractions for Checking Language Inclusion *with Francesco Ranzato and Pierre Ganty.*
MFCS 2020	A Quasiorder-based Perspective on Residual Automata *with Elena Gutiérrez and Pierre Ganty.*
SAS 2019	Complete Abstractions for Checking Language Inclusion *with Francesco Ranzato and Pierre Ganty.*
MFCS 2019	A Congruence-based Perspective on Automata Minimization Algorithms *with Elena Gutiérrez and Pierre Ganty.*
DCC 2019	Regular Expression Searching on Compressed Text *with Pierre Ganty.*
ATVA 2017	A Language-Theoretic View on Network Protocols *with Pierre Ganty and Boris Köpf.*

Committees

As a PhD student I have contributed to the organization of the ATVA'19 and TACAS'19 conferences as a member of the *Artifact Evaluation Committee*. The goal of these committees is to check consistency and replicability of results presented in submitted papers as well as evaluating their completeness, documentation and ease of use.

Education

2016 - 2020	PhD in Software, Systems and Computing at **Universidad Politécnica de Madrid** Graduated *Cum Laude*
2011 - 2016	Double degree at Computer Science and Mathematics at **Universidad Autónoma de Madrid** Obtained four consecutive *Excellence Awards* for academic performance. GPA: 9.14/10.0