Javier Verdú Mulá

http://people.ac.upc.edu/jverdu
javerdu@gmail.com
+34 93 401 6995
Barcelona, Spain
http://es.linkedin.com/in/XaviVerdu
javerdu

Entrepreneur focused on challenges to transform research ideas to real tech, especially those that require learning new computer science areas. A lover of carrying projects out from scratch, as well as leading/being integrated into agile technical teams working close to the R&D core.

Work Experience

09/2016 – Present (Barcelona, Spain)
Tenured Assistant Prof. and Senior PhD Researcher
BarcelonaTECH University
Recently I have created a new research group, in conjunction with other Senior PhDs, focused on virtualization technologies and OS, called VIRTUOS.

04/2012 - 07/2014 (Barcelona, Spain)
Co-founder, COO and CTO
Ludium Lab
Co-inventor of a patented technology (two international granted patents). Leading and working with a small engineering team aimed at R&D and continuous deployment of a cloud-gaming service and SaaS.

09/2010 – 08/2016 (Barcelona, Spain)
Tenure-Track Lecturer and Senior PhD Researcher
BarcelonaTECH University
I did research in multiple areas focused on improving performance and efficiency at different levels of the full stack. I have published +30 publications, many of them highly ranked in the area. I have co-advised 1 PhD, 1 Master Thesis, and +10 Bsc/Msc projects.

01/2007 – 09/2011 (Barcelona, Spain)
Computer Science Researcher
Barcelona Supercomputing Center
Collaborated in several research projects, such as Cisco Systems, as well as Sun Microsystems.

09/2006 – 08/2010 (Barcelona, Spain)
Assistant Professor
BarcelonaTECH University
From the beginning of my lecturer career I do Operating Systems lectures in the Barcelona School of Informatics.

09/2005 – 11/2005 (Milpitas, CA, USA)
PhD Student Internship
Consentry Networks Inc.
Performance analysis of massively parallel processors running upper layer network security applications.

09/2002 – 11/2002 (San Jose, CA, USA)
PhD Student Internship
FlowStorm Inc.
Study of massively multithreaded architectures used in network processors.

Education

09/2001 – 09/2008
PhD in Computer Architecture
BarcelonaTECH University
With a distinction *"cum laude"*. Research aimed at improving system performance that executes stateful L4-L7 network applications.

09/1996 – 09/2001
MsC & BsC in Informatics
Universidad de Las Palmas de G.C.
3rd in his class

Achievements

BDigital Awards (2012)
for Digital Innovation at SME
BDigital Global Congress

Award Project (2011)
Wayra - Startup Accelerator
Telefonica Spain

2 Best Paper Award (2012, 2009)
HiPEAC Network of Excellence

R&D Interests

Containers, Virtualization, OS, Optimization of parallel codes, Upper Layer network processing, Parallel processor architectures, SDN/NFV, Performance analysis, Ubiquitous Computing

Skills and Competences

Goal oriented (10/10)
Resiliency (10/10)
Instructor (9/10)
Agile (8/10)
Time management (8/10)
Verbal and written communication skills (8/10)

Languages

English (high-proficiency)
Catalan (native) **Spanish** (native)

Interests

High technology, Future Internet, Foreign languages/cultures, Space, Sports, Video games

Summary of Technology Skills

Programming Languages

.- Expert: C/C++, optimization of parallel source codes, reverse engineering (on binaries, OS and networking)
.- High experience: Java and Javascript (including some new APIs from HTML5), HTML
.- Medium Experience: Python, x86 ASM
.- Low Experience: Perl, other propietary assembly languages
.- *NOTE:* I parallelized critical parts of a well-known Network Intrusion Detection System, called Snort, dealing with functions similar to the current DPDK set of libraries.

Programming, Continuous Deployment and Monitoring Frameworks

.- High Experience: MS Visual Studio, Eclipse, Git
.- Medium Experience: Jenkins, Junit, Puppet, Nagios
.- *NOTE:* I coadvised a MSc Thesis focused on setting up a Continuous Delivery approach for a real cloud service, as well as I supervised its adoption in a real startup.

Cloud Infrastructure management

.- Medium-High experience: AWS, Azure, Dedicated Servers on different Datacenters, such as Hetzner, Codero, OVH
.- Low experience: OpenStack

Databases

.- High experience: MySQL
.- Medium experience: MongoDB
.- *NOTE:* Knowledge on pros and cons comparison of NoSQL DBs, but negligible experience

Agile Sw Development Methodologies and tools

.- High experience: SCRUM, Kanban, JIRA
.- Medium experience: Confluence

Operating Systems

.- Expert experience: Windows, Linux-like and UNIX-like
.- High experience: Solaris, OpenSolaris
.- Medium-High experience: Propietary soft real-time OSs customized for middleboxes
.- *NOTE:* I am a OS Lecturer at the Barcelona School of Informatics for more than 10 years and published several papers dealing with OS internals.

Virtual Machines, Containers and other virtualization tools

.- High experience: VirtualBox, VmWare
.- Medium experience: Docker
.- Low experience: QEMU, Xen
.- *NOTE:* I am actively involved in creating a new research group at the Computer Architecture Department (UPC – BarcelonaTECH) focused on Containers.

Analytics, Discover Data and Big Data

.- Medium-High experience: Google Analytics
.- Low-Medium experience: Kibana, Pentaho
.- *NOTE:* knowledge, but negligible experience on Map/Reduce programming model, Hadoop, Apache Spark and Apache Storm

Networking Related Experiences

.- High experience: analyse and modify the code of Network Intrusion Detection Systems (e.g. Snort and other propietary systems), analyse network traffic traces and synthetic generation (e.g. generate fake payloads, anonymazing IPs)
.- Low experience, but knowledge: HAproxy, GeoDNS, XMPP, WebRTC, OAuth 2.0, REST

Other Tech Related Experiences

.- Other tech knowledge related to performance of video codecs and videogames
.- Technical due-dilligence assessment, create consortiums and write projects for funding
.- Design and development of PoC (Proof of Concept)
.- Write and analyse patents (actively involved for the writing of my co-invented patents)

Summary of Research

Patents:

1. **Javier Verdú** and Alex Pajuelo. “Method, system and an executable piece of code for the virtualization of a hardware resource associated with a computer system”. Application Number: PCT/ES2013/070247. Priority date and country:19/04/2012, Spain; Granted: Spain and USA. Under assessment: Europe, China, Japan and South Korea.

2. Alex Pajuelo and **Javier Verdú**. “Method, system and an executable piece of code for controlling the use of hardware resources of a computer system”. Application Number: PCT/ES2013/070248. Priority date and country:19/04/2012, Spain; Granted: Spain and USA. Under assessment: Europe, China, Japan and South Korea.

Selected top 10 Publications (chronological order):

Journals

1. Petar Radojkovic, Vladimir Cakarevic, **Javier Verdú**, Alex Pajuelo, Francisco Cazorla, Mario Nemirovsky and Mateo Valero. "Thread Assignment in Multicore/Multithreaded Processors: A Statistical Approach". IEEE Transactions on Computers, Volume 65, Issue 1, 2016, pp 256-269. JCR: Q1; Ranking 10/50; Factor: 1.659.

2. **Javier Verdú**, Juanjo Costa and Alex Pajuelo. "Dynamic Web Worker Pool Management for Highly Parallel JavaScript Web Applications". Concurrency and Computation: Practice & Experience, Preprint version, 2015. DOI:10.1002/cpe.3739. JCR: Q2; Ranking: 46/102; Factor: 0.997.

3. **Javier Verdú** and Alex Pajuelo. "Performance Scalability Analysis of JavaScript Applications with Web Workers". IEEE Computer Architecture Letters, Preprint version, 2015. DOI: 10.1109/LCA.2015.2494585. JCR: Q3; Ranking: 34/50; Factor: 0.677.

4. Petar Radojkovic, Vladimir Cakarevic, **Javier Verdú**, Alex Pajuelo, Francisco Cazorla, Mario Nemirovsky and Mateo Valero. "Thread Assignment of Multithreaded Network Applications in Multicore/Multithreaded Processors". IEEE Transactions on Parallel and Distribnuted Systems, Volume 24, Issue 12, 2013, pp 2513-2525. JCR: Q1; Ranking 10/102; Factor: 2.173.

5. **Javier Verdú**, Alex Pajuelo and Mateo Valero. "The Problem of Evaluating CPU+GPU Systems with 3D Visualization Applications". IEEE Micro, Volume 32, Issue 6, 2012, pp 17-27. JCR: Q1; Ranking 5/50; Factor: 2.386.

6. Petar Radojkovic, Vladimir Cakarevic, Miquel Moretó, **Javier Verdú**, Alex Pajuelo, Francisco Cazorla, Mario Nemirovsky and Mateo Valero. "Optimal Task Assignment in Multithreaded Processors: a Statistical Approach". ACM SIGPLAN Notices – ASPLOS’12, Volume 47, Issue 4, 2012, pp 235-248. JCR: Q3; Ranking 71/105; Factor: 0.705.

7. Petar Radojkovic, Vladimir Cakarevic, **Javier Verdú**, Alex Pajuelo, Francisco Cazorla, Mario Nemirovsky and Mateo Valero. "Thread to Strand Binding of Parallel Network Applications in Massive Multi-threaded Systems”. ACM SIGPLAN Notices – PpoPP’10, Volume 45, Issue 5, 2010, pp 191-201. JCR: Q4; Ranking 96/99; Factor: 0.150.

Conferences

8. Ruken Zilan, **Javier Verdú**, Jorge García, Mario Nemirovsky, Rodolfo Milito and Mateo Valero. "An Abstraction Methodology for the Evaluation of Multi-core Multi-threaded Architectures". In Procs. of MASCOTS, 2011, pp 478-481.

9. Vladimir Cakarevic, Petar Radojkovic, **Javier Verdú**, Alex Pajuelo, Francisco Cazorla, Mario Nemirovsky and Mateo Valero. "Characterizing the resource-sharing levels in the UltraSPARC T2”. In Procs. of MICRO, 2009, pp 481-492.

10. **Javier Verdú**, Mario Nemirovsky and Mateo Valero. "MultiLayer Processing – An Execution Model for Parallel Stateful Packet Processing". Procs. of ANCS, 2008, pp 79-88.