

## FRANCISCO MATIAS CUENCA-ACUNA

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### PROFILE

Over fifteen years of experience providing infrastructural software solutions. Unusual combination of skills including scientific, technical and business acumen. Experience participating and coordinating multidisciplinary teams. Interests on Distributed Systems, Security, Internet Servers, Modeling and Data Analysis.

### EDUCATION

Ph.D. in Computer Science, [Rutgers University](#), New Brunswick NJ, April 2004

M.S. in Computer Science, [Rutgers University](#), New Brunswick NJ, May 2001

B.S. in Computer Science, [FAMAF-UNC](#), Argentina, March 1999

### PROFESSIONAL & ACADEMIC EXPERIENCE

*Intel, Cordoba, Argentina*

**Platform Architect**, 2008 – present

**Software Architect & Technical Lead**, 2006 – 2008

- Due to the competitive nature of the software industry, I cannot disclose any details here. To obtain a complete resume please email me.

*FAMAF – Universidad Nacional de Cordoba, Cordoba, Argentina*

**Assistant Professor**, 2004 – 2008

*Ask Jeeves Inc., New Jersey, USA*

**Systems Architect & Technical Lead**, 2005 – 2006

**Research Engineer**, 2004 – 2005

Ask Jeeves is the third most visited search engine globally (Morgan Stanley 2006), serving 4 billion queries per month and reaching over 25% of the active US Internet audience. Upon my arrival I worked on how to expand their multi-billion document index. One year after, I became the architect and technical leader of a major software redesign project. My current role involves coordinating the work of over 20 developers located in California, New Jersey and China.

*Highlights:*

- Designed the new offline system architecture for continuous url scheduling, crawling & data processing. This project represents a multi million dollar investment which is scheduled to replace the existing infrastructure (400,000 C++ lines) running across 1000 machines.
- Doubled the amount of pages crawled (over 6 billion) and improved the refresh frequency for individual web pages by developing the idea of adaptive crawling.

*Rutgers University, New Jersey, USA*

**Research assistant**, 2000 – 2004

**Resource management for federated computer systems**, with Dr. *Thu Nguyen*, 2001 – 2004

Studied infrastructural support for managing data and replicated services in federated computing environments. Federated systems are typically comprised of heterogeneous components spanning multiple organizations; thus, a major challenge for building federated applications is the lack of centralized control and high system volatility. A completely decentralized framework, which provides global and coherent control of resources, was constructed to address these challenges (33000 Java lines). Stochastic models and simulations (18000 Perl lines) were used in the design phase to predict performance and scalability. To date, this work has been successfully tested on deployments spanning over 100 universities around USA and has been cited in over 40 scientific publications.

**Cooperative caching on clusters**, with Dr. *Thu Nguyen*, 2000 – 2001

Studied the use of a generic cluster-wide page cache to increase throughput on stock web servers.

Research found that servers using the cooperative caching middleware layer could achieve 92% of the performance, when compared to specialized cluster based servers that implement request distribution.

**FAMAF – Universidad Nacional de Cordoba**, Cordoba, Argentina

**Using neural networks to forecast air pollution levels**, with Dr. *Sergio Cannas*, 1999

Evaluated the use of artificial neural networks and linear regression models for predicting air pollution levels. The study was done using historical pollution data from the city of Cordoba. Several distributed implementation were studied in order to be able to compute the forecast in less than one hour.

**Harvest SA**, Cordoba, Argentina

**External Consultant**, 1999

Hired by Harvest SA to work with their largest client, **Red Vial Centro**, to assist in the development of software for controlling highway toll stations. Red Vial Centro is a private company that owns over 200 miles of highways on the province of Cordoba.

*Highlights:*

- Provided expertise on embedded systems and UNIX environments to design hardware and software interfaces for controlling road sensors. Worked with a mix team of Electrical Engineers, toll station maintainers and operators (12000 C++ lines).
- Created a hot replacement facility to minimize toll booth downtime.

**Environmental Observatory of Cordoba**, Cordoba, Argentina

**Software Engineer**, 1997-1999

**System Administrator**, 1996-1999 (*concurrent with the above*)

The Environmental Observatory is a government agency, responsible for monitoring the air quality of Cordoba city (1.5 million people). On a daily basis thousands of air samples are automatically collected and analyzed around the city. This data is periodically transmitted to a central station where is used to detect and predict unhealthy pollution levels.

*Highlights:*

- Assisted in the process of reducing operational costs by developing in-house systems to replace imported software. Worked with personnel in multiple areas to study software requirements.
- Designed and developed control software for unmanned monitoring stations. A major challenge was to provide uninterrupted service and autonomous operation. A Tandem like hardware and software architecture with redundant communications channels, control units and instruments was used to accomplish the task (8000 C++ lines).
- Supervised and coached IT teams working on Data Warehousing, Geographic Information Systems and Multimedia development.
- Reduced software license costs by migrating existing Novel Netware servers to open source UNIX implementations (30+ clients).
- Designed an active security scheme to protect the internal network against Internet attacks. This scheme has endured over 6 years of uninterrupted service.

**Nanotesla Inc., Maryland, USA**

**Embedded Software Developer, 1995 & 1996**

Nanotesla INC manufactures magnetometers that are used primarily for petrol excavation and space exploration.

*Highlights:*

- Worked on the development of their new portable unit, writing data analysis and control software for Windows.
- Programmed a Z180 microcontroller, embedded on a magnetometer, to provide real-time data logging and PC communication.

**Consultores en Informatica SA, Cordoba, Argentina**

**External Consultant, 1994**

Hired by Consultores en Informatica to provide expertise on multimedia systems for two of their contracts with the provincial government of Cordoba (a 3 million people province).

*Projects:*

- **Banco de Cordoba** – Designed multimedia kiosks for selling real state. Provided software libraries to allow developers to interface existing real state database with multimedia kiosks (4000 VB lines).
- **Cordoba's Tourist Office** – Designed multimedia kiosks for providing tourist information. These kiosks were supported by hotels that offered accommodations through them (6000 VB lines).

**SELECTED PUBLICATIONS (out of fifteen)**

**“Reducing the Availability Management Overheads of Federated Content Sharing Systems”**. C. Peery, F. M. Cuenca-Acuna, and T. D. Nguyen. In Proceedings of the 25th IEEE Symposium on Reliable Distributed Systems (SRDS), October 2006.

**“Self-Managing Federated Services”**. F. M. Cuenca-Acuna and T. D. Nguyen. In Proceedings of the 23rd IEEE Symposium on Reliable Distributed Systems (SRDS), October 2004.

**“Autonomous Replication for High Availability in Unstructured P2P Systems”**. F. M. Cuenca-Acuna, R. P. Martin and T. D. Nguyen. In Proceedings of the 22nd IEEE Symposium on Reliable Distributed Systems (SRDS), October 2003.

**“PlanetP: Using Gossiping to Build Content Addressable Peer-to-Peer Information Sharing Communities”**. F. M. Cuenca-Acuna, C. Peery, R. P. Martin and T. D. Nguyen. In Proceedings of the 12th IEEE International Symposium on High Performance Distributed Computing (HPDC), June 2003

**“Cooperative Caching Middleware for Cluster-Based Servers”**. F. M. Cuenca-Acuna and T. D. Nguyen. In Proceedings of the 10th IEEE International Symposium on High Performance Distributed Computing (HPDC), August 2001.

**TEACHING EXPERIENCE**

- Undergraduate course on "Computer Networks", FAMAF - UNC, 2007
- Undergraduate course on "Operating Systems", FAMAF - UNC, 2006
- Undergraduate thesis advisor of Marcos Dione (2002-2004) & Gustavo Petri (2004-2005) (joint work with Lic. Wolovick), FAMAF – UNC
- Graduate course on “Distributed Systems”, FAMAF – UNC, 2004
- TA of “Operating Systems” and “Computer Applications for Business”, Rutgers University, 1999-2001
- TA of “Operating Systems”, “Computer Architecture” and “Paradigms of programming languages”, FAMAF – UNC, 1996-1999

### CONFERENCE REVIEW & COORDINATION ACTIVITIES

Transactions on Information Systems (IEEE 2011), STIC AmSud (2011), SAC Software Verification and Testing (ACM 2009), Transactions on Knowledge and Data Engineering (IEEE 2008), Transactions on Software Engineering (IEEE 2007), QEST (2006), INFOCOM (IEEE 2006), INFOCOM (IEEE 2005), The computer journal (Oxford Press 2005), Conferencia Latinoamericana de Informática (CLEI 2004), Information Processing & Management Journal (Elsevier 2004), International Conference on Parallel and Distributed Systems (IEEE 2004)

### SKILLS

- **Programming Languages:** C, C++, Java, Perl, Basic, x86 and PIC Assembly Language
- **Web technologies:** J2EE, Tomcat, Web Services, Grid Computing, XML (SAX, DOM, XPATH), SOAP, RMI, UDDI, LDAP
- **Operating Systems:** MS Windows 98/XP/2000/NT, UNIX, Linux, Novell Netware
- **Others:** Fluent in Spanish, Significant travel exposure (South America, Europe, Asia and Africa)

### SELECTED COURSEWORK OUTSIDE AREA OF EXPERTISE

- **Artificial intelligence:** Machine Learning (2002), Neural Information Processing (1999)
- **Modeling & Optimization:** Modeling & Simulation of Discrete Systems (1998), Heuristic Algorithms for Combinatorial Problems (1995), Operations Research (2003)
- **Algorithms:** Computational Geometry (2000), Randomized Algorithms (1996)

### HONORS

#### **FOMECA 454 grant, 1999-2001**

Given by the World Bank and the Argentinean government to pursue a PhD degree.

#### **UNESCO grant, 1999**

To attend the "School on neural information processing" at the [Intl. Center for Theoretical Physics](#).

#### **International Olympiad in Informatics (IOI), 1992**

Ranked 2<sup>nd</sup> best on the first division of Argentinean tournament.