Carlos S Castro

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Education

Master of Information in Data Science, University of California, Berkeley. In progress

Master Computer Science, Buenos Aires Institute of Technology (ITBA), graduated 12/2011

Bachelor Computer Science, Buenos Aires Institute of Technology (ITBA), graduated 07/2010

Academic awards

- 1st place in Theoretical Physics and Experimental Physics, 2004 Argentine National Physics Olympiad
- Selected for the National Physics Team in 2005. Trained several months with Argentina's most recognized researchers
- Silver Medal in Theoretical and Experimental Physics, 2004 Ibero-American Physics Olympiad. This competition included teams from all South and Central America, Spain and Portugal
- Granted a Merit Full Scholarship at ITBA for the computer science degree, in recognition for the awards achieved while representing the country

Work History

[Oct 2012 - Present] Skype
Software Engineer

- Focused on the back end of Skype
- Architected or influenced significant changes across most areas within Skype
- Drove the efforts to break up Skype's monolithic core into segregated single responsibility cloud based services
- Performance: Ranked among the top 1% each review and promoted 3 times in 3 years due to exceptional results

[Jan 2012 – Sept 2012] Kormox
Software Development Engineer

- Fast paced security startup
- In a handful of months, contributed to most aspects of this end to end security distributed system
- Among many other things, implemented and shipped high complexity kernel mode mini filter driver for security application

[Jul 2010 – Sep 2012] FuDePan - Volunteer
Software Engineer / Researcher / Volunteer

- FuDePAN is a foundation dedicated to the research and development of bioinformatics solutions to make people's lives better
- In my spare time, I contributed to the foundation by designing algorithms and developing software
- Created generic phylogenetic library to perform multiple operations with phylogenetic trees
- Presented work in many Biology symposiums

[Feb 2009 – Dec 2012] Ingematica S.A.
Lead Software Development Engineer

- Analysis, design, development and coordination of a 12 person team
- Architecture and long term technological vision for the company's product
- Defined the architecture for business applications that was used in all the company's projects. The use of this generic architecture reduced development time by 30%
- Success Case: A pay-pal like company had, at the beginning of the project, 35% of fraudulent transaction. I designed and developed the core modules and coordinated the development team for the Fraud Detection Module (FDM), which in 2 weeks reduced the fraud rate to 7%. The FDM uses several technologies such as dynamic LINQ expression trees, WCF and neural networks for anomaly detection and pattern matching

[Jan 2008 – Jan 2009] Bitflow Consulting S.A.
Software Development Engineer

- Developed web service applications for many S&P500 companies

Research

Bioinformatics

- Conducted research on the field of phylogeny during my engineering thesis
- The goal of the thesis is to find an optimality criterion that integrates diseases' phylogenetic and geographic data to track the geographic origin and the dispersion dynamics of emerging diseases
- Created a highly optimized C++ phylogenetic library which is still being used by a handful of bioinformatics organizations
- Published a side article about technical aspects in the technical C++ magazine called Overload, in which eminences such as Bjarne Stroustrup – one of the creators of the C++ programming language - usually publish. The article was titled 'Curiously recursive template problems with Aspect Oriented Programming'

Complex Networks and Graph Theory

- Designed and implemented a high performance C++ library that provides advanced calculations for complex networks, internet topology and graph theory
- Provides random graph generation using several algorithms: Erdos-Renyi, Barabasi-Alvert, extended hot, Molloy-Reed and hyperbolic
- Computes advanced graph properties such as betweenness, degree distribution, clustering coefficient, nearest neighbors degree, shell index and maximal clique
- The library is being extended constantly by research groups, so far by 12+ PhD students have contributed
- The library is used by several research teams at University of Buenos Aires

Qualities

- Strong analytic skills
- Fast learner
- Excellent communication skills
- Team worker

Skills

- Proficient programming skills in C#, C++, Java, SQL and several others
- Proficient building distributed algorithms and systems
- Proficient building large scale cloud based, fault tolerant and highly scalable services and applications

Demos

- Bioinformatics:
  - C++, high performant implementation of algorithms created during my college thesis
  - http://code.google.com/p/phyloloc/source/browse/
- Complex Networks & Graph Theory:
  - Complex networks and graph C++ library. Meticulously performance and design oriented. Generates random graphs and calculates complex graph properties
  - https://code.google.com/p/complexnets/source/browse/
- Operating Systems:
  - Experimental operating system, x8086 protected mode. Memory paging and round robin CPU scheduling. Exception handling, system calls and user's stack relocation
  - http://code.google.com/p/phyloloc/source/browse/
- Neural Networks
  - Matlab Neural Networks supervised learning implementation. Given an electrocardiogram as input, detects patterns of heart diseases.
  - http://code.google.com/p/heartneuralnetwork/source/browse/
- Genetic Algorithms:
  - Generic genetic algorithms library and Boolean function interpolation application by mutating expression trees
  - http://code.google.com/p/tpesia1/source/browse/
- Overload magazine publication:
  - Title: Curiously recursive template problems with aspect oriented programming
  - http://accu.org/var/uploads/journals/overload109.pdf