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Senior Software Developer

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I'm a software developer with 10+ years of professional experience. My main expertise is *the C programming language* in *Linux*, using multi-threading and inter-process communication, in particular for the broadcast industry. In all these years I have also worked a lot with *Perl*, *Bash*, and *Python*. Previously, I had worked with *Java* for 2 years for financial institutions.

With my experience, I can learn, understand, and work on any task or problem as needed. I enjoy studying bugs and solving problems even when I don't have much experience in that topic. To accomplish this, I learn new languages, frameworks, or libraries as needed. For instance, I have also worked with *React*, *.NET*, *Java*, and *Android*.

I started learning and programming in *C* in 2007, and my curiosity about the inner workings of the computer led me to learn the basics of *x86 assembly language*. Then in 2008, I started using *GNU+Linux*, and I've been using *Slackware* since 2009.

Professional Experience

3Way Solutions[1] — Senior Software Developer _____ 2011 — *Present*

I design and develop systems for the broadcast industry. I use *C* to program systems for *Linux*, developing software and libraries to receive multimedia content, and then decode, analyze, encode, store, and transmit it. I work with TV signals (analog and digital), radio signals, and *OTT* content. For instance, we develop products such as a multiviewer, a video logging, a video clipping, an IP decoder, etc.

In this position, I work with the *FFmpeg* library and also with specifications such as *MPEG-TS*, *ISDB-T*, *ATSC*, *HLS*, *H.264*, *AAC*, *SDI*, *ASI*, *NDI*, and so on. Sometimes I read and learn new specifications to include new features. I also work a lot with *Perl* and *Bash*.

Some of my key accomplishments are:

- Developing multi-threading software in *C* that communicates with external devices and runs 24/7 non-stop.
- Programming a library to demux *MPEG Transport-Stream*, and another one to receive *HLS* content.
- Implementing an algorithm and making a library to compare images and videos and decide if they are similar or not.
- Making clipping software to cut a video without re-encoding, taking advantage of the *GOP* structure.
- Adding hardware support implementing the device API, such as *AJA*, *Blackmagic*, *DekTec*, *Hauppauge*, and more.
- Improving external projects such as fixing a bug in *FFmpeg*[2] and improving it's *SRT* implementation,[3] adding functionality to *yt-dlp*,[4] and improving the *TBS* driver.[5]
- Working with *Perl*, *Bash*, and *Python* to write small scripts or programs, and sometimes improving our web application using *React* and *JavaScript*.
- Traveling to other countries for business. In the year 2021, I went to Mexico to show our products to the government, as they needed a system to monitor the TV and radio broadcast. In 2024, I participated in the *NAB Show*[6] as an exhibitor in Las Vegas.

Boreal IT[7] — Freelancer _____ 2023 — *Present*

I work as a freelancer, solving bugs or developing new features as they request me. In this position, I'm constantly learning new skills, as I work on all kinds of different projects.

I can adapt to any project, as I can easily learn new tools or frameworks when I need to. For instance:

- Reviewed and found an issue with a *Siemens PLC* that wasn't working as expected.
- Adding functionalities to an *Android* application written in *Java*.
- Fixing bugs in a *React Native* application.
- Adding functionality to a backend written in *Java* and *Spring JPA*, and another one in *.NET* and *Entity Framework Core*.
- Working in frontend with *React*.

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[1] 3Way Solutions — https://3way.com.ar/en/
[2] https://git.ffmpeg.org/gitweb/ffmpeg.git/commit/5a0a9f78252825dfe1824eedbc373aea443e5e77
[3] I sent the patch, but it wasn't accepted: https://patchwork.ffmpeg.org/project/ffmpeg/patch/20240919134646.3841-1-nicolas.dato@gmail.com/
[4] https://github.com/yt-dlp/yt-dlp/commit/0d531c35eca4c2eb36e160530a7a333edbc727cc
[5] https://github.com/tbsdtv/linux_media/commit/98fa0e79a07a2f4b869eda147a8c52967d1edc51
[6] National Association of Broadcasters trade show — https://nabshow.com/2024/
[7] Boreal IT — https://it.borealtech.com/en/

Baeldung[8] — Linux Technical Writer $\qquad$ *2020 — 2022*

I wrote several technical articles about *Linux* and *Bash*. In this experience, I improved my writing skills and also my technical knowledge. Here are some examples of articles I wrote:

- Replace String in a Large One Line, Text File — https://www.baeldung.com/linux/replace-string-one-line-text-file
- IPC Performance Comparison — https://www.baeldung.com/linux/ipc-performance-comparison
- Understanding Bind Mounts — https://www.baeldung.com/linux/bind-mounts
- Storing a Command in a Variable in a Shell Script — https://www.baeldung.com/linux/store-command-in-variable
- Here the full list of articles: https://www.baeldung.com/linux/author/nicolasdato/

Consultoría Global[9] — Ssr Java Developer $\qquad$ *2009 — 2011*

I developed several web applications for financial institutions, using *Java* and frameworks such as *JSP*, *Hibernate*, *Spring*. I also worked in frontend using *HTML*, *JavaScript*, and *CSS*.

In the beginning, they assigned me to projects that were already started before I joined the company. As my experience and skills improved, I started new projects designing web applications from scratch.

As my employer knew I had a background in *C*, they requested me to fixed a program written in C by another company. I had to review the code and fixed the problem, which was related to the migration from 32 to 64 bits and incorrect usage of pointers.

Education

Universidad Nacional del Sur — Computer Science $\qquad$ *2016 — 2022*

50% of the career. When I moved to another city, I continued the *computer science* career at *UNS* until I halted it due to lack of time. I intend to continue this career in the future.

Universidad de Buenos Aires — Computer Science $\qquad$ *2011 — 2014*

30% of the career. After secondary school, I started *computer science* at *UBA*. Then in 2014, I moved to another city and I prioritized my professional career.

Key Knowladge

Main expertise	: C with threads, sockets, mutex, semaphores, kernel scheduler, IPC
Other languages I work with	: SQL, Perl, Bash, Python, and also Java, .NET, React, Android
Tools and libraries	: Git, CUDA, NVENC/NVDEC, FFmpeg, Video4Linux, Valgrind, VIM, Autotools, LaTeX
Linux distributions	: CentOS, Raspberry Pi, Slackware, OpenBSD
Broadcast industry	: H.264, H.265, AAC, AC3, SCTE-27, Closed Captions, SCTE-35, ASI, SDI, HDMI, NDI, HLS, RTSP, RTMP, SRT, MP4, MPEG-TS, ATSC, DVB, ISDB-T

Extras

In my spare, time I contribute to *OpenStreetMap*[10] and *Wikipedia*. Also in 2009, 2011, and 2012, I participated in the *FLISoL*[11] as an installer. I almost exclusively use and work on *Linux*.

Once a year, I volunteer in a local project called *Todos al Agua*[12], where we teach how to swim to kids from low-income families. I love swimming, and I participate in a local tournament. In the summer I practice open water swimming.

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[8] Baeldung — https://www.baeldung.com/
[9] Consultoría Global — https://www.consultoriaglobal.com.ar/cgweb/?lang=en
[10] OpenStreetMap — https://www.openstreetmap.org/
[11] Festival Latinoamericano de Instalación de Software Libre (Latin American Free Software Install Fest) — https://flisol.info/
[12] Todos al Agua (Everyone into the Water) — https://www.instagram.com/todosalagua/