Antonio Nascimento Lutfi

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I am a generalist programmer with broad interests and a special passion for visual art and entertainment. I am currently working with Computer Vision and Machine/Deep Learning. My goal is to stay in this area, in a role where I am needed to do a lot of learning and research.
I have experience in multiple fields, ranging from state budget to Computer Vision art installations. I love the enormous variety of problems that can be solved with Computer Science and relish new challenges and learning things from scratch.

DSc Computational Sciences and Mathematics at Universidade de São Paulo. March 2026(expected).
MSc Informatics at Pontifical Catholic University (Rio de Janeiro, Brazil). April 2015.
BSc Computer Science at Pontifical Catholic University (Rio de Janeiro, Brazil). July 2010.

Human Languages: Native Portuguese | Fluent English (TOEFL IBT 114/120)
Computer Languages: C | **C++** | **C#** | **Python** | **R** | **Delphi/Pascal** | **SQL**
CV and ML: PyTorch | **TensorFlow** | **Cuda** | **cuDNN** | **OpenCV** | **Spacy** | **Tesseract** | **Jupyter Notebooks**
AWS: ECR | **ECS** | **SQS** | **SNS** | **Lambda** | **Transcribe** | **MediaConvert** | **Rekognition**
MakerSpace/Prototyping Skills: Arduino/RaspberryPi | **Electronic Soldering** | **Basic Woodwork**
Other tech skills: Linux/UNIX | **Unity3D** | **GIT**
Hobbies: Guitar | **[Video] Games** | **Cooking** | **Writing** | **Reading** | **Movies/Series/TV** | **Exercising** | **Travelling** | **DSLR Photography**

Latest Employment

DSc Candidate @ ICMC - University of São Paulo

I am a DSc candidate at the Computational Mathematics and Sciences Institute since **February 2022**, with **expected** graduation in **March 2026**.
Advised by João Batista Neto, I research on how to improve Deep Leanring models that employ Visual Attention mechanisms by using eye-tracking devices during data labeling.

Previous Employment

Computer Vision Engineer @ EnVsion

I was a Computer Vision Engineer at EnVsion from **June 2020** to **July 2021**
EnVsion develops a video productivity platform to make teams faster and more efficient. Specifically, on top of usual editing functionalities, they use AI to understand video contents and allow indexing and search operations much more powerful than what's currently available.
As a member of the founding team of this early stage company, apart from the following technical aspects of my role, I also got to witness and participate on company structuring and strategic activities.
I wrote code to extract information from video with **Computer Vision**, **Deep Learning**, and **Natural Language Processing(NLP)**. Code is usually in **Python**. Computer Vision applications, that range from object/people detection to OCR, usually use **OpenCV**, **Tesseract**, **TensorFlow**, and **PyTorch**. For NLP tasks, it's common to use **Spacy**. Exeperiments frequently relied on **Jupyter Notebooks**. Models, when possible, take advantage of GPU, using **CUDA** and **cuDNN**.
On top of these ML activities, I also participated in the deployment of AI services using **AWS**'s tools that include:

- **ECR** and **ECS**, for running **Docker** containers
- **SQS** and **SNS**, for communicating between **AWS**'s components and EnVsion's API
- **Lambda** functions for short tasks, such as video transcoding, for example
- **Transcribe** for extracting transcript from video
- **S3**, **CloudWatch**, and **IAM** roles, as you can't get much done in **AWS** without them

Some examples of what I've done include:
- Writing classes that make object detection easier, abstracting the underlying models, such as **YOLO**, **Mask RCNN**, and **SSD**, for example
- Using and tweaking the implementation of **Deep SORT** for object tracking
- Creating a simple and modular pipeline structure for plugging and unplugging deep learning functionalities
- Creating a template class that allows an AI tool to listen to an **AWS SQS** queue for videos to be processed and its results to be posted where they need. Almost all of EnVsion's AI services extended this class
- Using **Aeneas** audio alignment library to realign manually edited portions of an auto-generated transcript to the video's audio track
- Segmenting videos in separate shots, using **TransNetv2**
- Celebrity detection using **AWS**'s **Rekognition**
- Extracting text from presentation/class videos with **Tesseract**
- Multiple Deep Learning functionalities in road-related videos. Such as a vehicle counter and a make/model identifier that crosses information with license-plate data to detect fraud. (EnVsion started focusing on traffic videos)

The team members all worked remotely. Communication and productivity tools included **GIT**, **Trello** and **Slack**.

Programmer & Prototyper @ OHMS

I was a Programmer and Prototyper at OHMS **from April 2016 until June 2017** when it closed. It was a MakerSpace in Rio de Janeiro that took on both comissioned and internal research projects.
I investigated ways to improve on the FabScan 3D Scanner so it could run with multiple cameras, multiple laserbeams and auto-calibration with fiducial markers, giving the user the possibility to adjust the layout according to the shape of the scanned object. The code was in **Python**.
I was also the developer and main creator of the Invisible Wall, an interactive art instalation for a 2016 Arts and Technology Festival by Incubadora de Artistas, coded in **C/C++**.
Both these projects use **OpenCV**'s resources.

Programmer & Researcher @ ICAD/VisionLab

From June 2013 to January 2016 - I was a Programmer at ICAD/VisionLab, Prof. Bruno Feijó's Computer Vision, CG and Games lab at PUC-Rio **since June 2013**. I was one of the lead programmers in a 3D game written in **C#** using **Unity 3D**. One of its main research goals was to improve narrative and storytelling process on videogames.
I was also the sole programmer responsible for coding two projects for Rede Globo, the largest brazilian TV network.
The first one was MarkerFinder, which aimed to make the process of mapping fiducial markers on a studio's ceiling automatic. This map of markers is used to calculate a camera's position in the studio, making it possible to superimpose graphical effects with precision. It's coded in **C++** using OpenCV.
The second deals with loading video frames to GPU, for faster image processing. It was written in **C**.

Database Analyst @ ICA - Applied Computational Intelligence Lab

From August 2010 to July 2012 - As a Database Analyst for ICA (**SQL**), I was part of the team developing project Municípios Inteligentes *(Intelligent Cities)*, which aimed to improve the management of public resources throughout the state of Rio de Janeiro's cities with the use of Artificial Intelligence.
I was responsible for studying and understanding each of the project's pilot cities' revenue databases and migrate their data to the database designed by the Business Intelligence team.

Intern & Trainee @ StoneAge Tech

From July 2006 to January 2009 - First as an **Intern** then as a **Trainee**, I had my first experience managing proofs of concept, projects and client relations. I coded, on **Delphi/Pascal**, database and statistical analysis software on a proprietary high speed platform.
As a Trainee I dealt mainly with a product for market segmentation and selection. The customers were usually large companies with big client databases. StoneAge's product could segment these kinds of databases very quickly, showing how many people were in each segment. The company could then decide to launch a marketing campaign for a very specific target audience. My role in this was understanding the customers' needs and implementing the processes so they could use this product.

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