Rafael Claro Ito

Electrical Engineer
HW & SW Developer
Data Scientist

03/02/1992

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Languages

- English
- Portuguese
- Italian
- French
- Spanish
- Japanese

Awards

- 2009 6th place at OSA
- 2009 Silver Medal at OBMEP
- 2008 Silver Medal at OBMEP
- 2008 Certificate of Merit at OMU
- 2007 Honorable Mention at OBMEP
- 2006 Honorable Mention at OBMEP

OBMEP: Brazilian Public Schools Mathematics Olympiad
OSA: UNICAMP Physics Olympiad
OMU: UNICAMP Mathematics Olympiad

Education

Graduate

University of Campinas

Jan 2017 – current — Campinas/SP

Part-time Masters degree without being officially enrolled.

	Subject	Credits	Professor(s)	Semester	Grade
IA353A	Redes Neurais	4	Fernando José Von Zuben	1s2020	in progress
IA376E	Tópicos Em Engenharia de Computação VII ↪ Redes Neurais Profundas Para Processamento de Linguagem Natural	4	Roberto de Alencar Lotufo	1s2020	in progress
IA006C	Tópicos em Sistemas Inteligentes II ↪ Aprendizado de Máquina	4	Levy Boccato Romis Ribeiro de Faissol Attux	2s2019	A
IA368N	Tópicos em Engenharia de Computação V ↪ Introdução à Robótica Móvel	4	Eleri Cardozo Eric Rohmer	2s2017	A
IA750A	Engenharia de Reabilitação	4	Antonio Augusto Fasolo Quevedo	2s2017	A
IA368W	Tópicos em Engenharia de Computação V ↪ Métodos Estocásticos Para Robótica Móvel	4	Eleri Cardozo Eric Rohmer	1s2017	A
IE327P	Tópicos Especiais em Microeletrônica III ↪ Sensores, Condicionamento e Aquisição de Dados	4	Elnatan Chagas Ferreira	1s2017	A

* table information in Portuguese

Undergraduate

University of Campinas

Jan 2011 – Dec 2016 — Campinas/SP

	Subject	Credits	Professor	Semester	Grade
EA999A	Tópicos em Egenharia de Computação ↪ Curso Teórico-Prático de Redes Neurais Convolucionais	4	Roberto de Alencar Lotufo	Férias de Verão 2020	8.9

* table information in Portuguese

Undergraduate (Student Exchange Program)

Queen Mary University of London

Sep 2014 – Aug 2015 — London

Studies sponsored by the Brazilian government due to academic merit. Science without Borders (SwB) student exchange program.

Further Education

Technical College of Campinas - UNICAMP

Jan 2007 – Jul 2010 — Campinas/SP

Selected to work as a Teaching Assistant of the technical course.

Machine Learning Portfolio

Jupyter notebooks:

Computer Vision:

- MNIST: Linear Classifier
- MNIST: Extreme Learning Machine (ELM)
- MNIST: Multilayer Perceptron (MLP)
- MNIST: ConvNet (CNN)
- Transfer Learning: Cats and Dogs
- Transfer Learning (last layer): Fruits360
- Transfer Learning (fine tuning): Fruits360

Natural Language Processing (NLP):

- Language Model
- Sentiment Analysis (IMDb dataset) using:
  - Bag-of-Words
  - TF-IDF
  - Simplified Self-Attention
  - Transformer (Encoder only)
  - BERT
- T5 English to Portuguese Translator

Video Processing:

- YOLO — in progress
- MobileNets — in progress

One-page papers summary:

* available only in Portuguese

- "A Neural Probabilistic Language Model", 2003
  ↪ summary:
- "A Unified Architecture for Natural Language Processing: Deep Neural Networks with Multitask Learning", 2008
  ↪ summary:
- "Efficient Estimation of Word Representations in Vector Space", 2013
  ↪ summary:
- "Deep Learning", 2015
  ↪ summary:
- "Effective Approaches to Attention-based Neural Machine Translation", 2015
  ↪ summary:
- "Attention Is All You Need", 2017
  ↪ summary:
- "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding", 2019
  ↪ summary:
- "Exploring the Limits of Transfer Learning with a Unified Text-to-Text Transformer", 2019
  ↪ summary:
- "The Curious Case of Neural Text Degeneration", 2019
  ↪ summary:

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Programming Skills

- Python
  - ↪ PyTorch
  - ↪ NumPy
  - ↪ TensorFlow
- C/C++
- Assembly
- VHDL
- Ladder Logic
- LaTeX

Softwares Experiences

- Linux
- MATLAB/Octave
- Git
- Docker
- Jupyter Notebooks
- Anaconda
- Ansible
- Zabbix
- Qt
- CodeWarrior
- Kinetis Design Studio
- Quartus (Altera)
- AutoCAD

Embedded Systems

- BeagleBone Black
- Raspberry Pi
- FRDM-KL25Z
- FRDM-K64F
- Arduino
- FPGA / CPLD

References

João da Silva
Head of blah

· **Relação:** ex-boss
· **contato:** joao.silva@gmail.com

Fulano Beltrano
Professor at Unicamp

· **Relação:** ex-professor
· **contato:** fulanobeltra@gmail.com

Working Experience

Technological Development Analyst

CNPEM/LNLS

Jan 2016 – current | Campinas/SP

Undergraduate internship realized at LNLS (Brazilian Synchrotron Light Laboratory) during the year of 2016 at the Controls Group with focus in hardware and software projects for the Sirius particle accelerator. At this period, projects with microcontrollers, single board computers, and platforms like BeagleBone Black and Green, Kinetis development platform KL25Z and K64F, and CPLD projects were developed.
At the beginning of 2017, I was hired as Technological Development Analyst. Most of the projects consisted of the development of hardware and software to remotely control devices. The controls system platform adopted is the EPICS. Network management, Linux servers maintenance and interns mentorship were also related activities.

- **SPIxCONV:** This project consists of an 18-bit analog input (ADC) and output (DAC) within a range of 20 V (± 10 V) and 32 digital pins that can be either as inputs or outputs. This system interfaces with pulsed power electronics hardware in order to control the output voltage for pulsed magnets as well as read and write status commands to their power supplies. An operator interface (OPI) software based on Qt was also developed for remote control.
- **VBC:** This project (vacuum-bbb-controller) consists of a hardware based on BeagleBone Black that controls (read and write) a pump station. Several devices are controlled, such as mechanical pump, turbomolecular pump and valves. An OPI for remote control was also developed.
- **pydm-opi:** Set of all OPI screens built with PyDM (PyQt-based framework) developed by the Controls Group of LNLS.
- **mailpy:** Python script that monitors several variables, check their specified operation values and send e-mails to a list of targets with a warning message if the variable value exceed its limits.

Teaching Assistant

University of Campinas

Jan 2016 – Jul 2016 | Campinas/SP

During this period I was responsible for helping the teacher to prepare the laboratory experiments and to help the students with all the laboratory classes of the subject EE641 (Basic Electronics Lab II). Several projects for the platform Raspberry Pi were developed. For example, PWM controllers, wireless data transmission, temperature sensor with thermostat, R/2R ladder DAC, Successive approximation ADC, ECG waveform generator and signal recorder.

Scientific Research

Queen Mary University of London

Jun 2015 – Sep 2015 | London

The research was performed in the audio engineering area with focus on the synthesis of sounds. Through studies of spectrograms, power spectrums and time domain analysis, it was generated algorithms that synthesize the sound of different types of electric motors.

Electronics intern

CPqD - Telecommunications Research and Development Centre

Jan 2010 – Jun 2010 | Campinas/SP

This internship was about performing quality tests in telecommunication equipment and build reports for the ANATEL (National Telecommunications Agency). The aim was to certificate and homologate products in order to legally commercialize and use them in Brazil. The tests were about the first layer of the OSI model (physical layer). The most common interfaces certificated were ADSL, E1, SHDSL, V.35.

Teaching Assistant

Technical College of Campinas

Jan 2009 – Dec 2009 | Campinas/SP

I was responsible for assisting the teachers in the laboratory classes and helping other students solving doubts about any subject of the electrical-electronic course. As result, I could improve my social skills and my time management, since I studied the high school in the morning, the further education (electrical-electronic) in the afternoon and I worked on the programme at night.

Publications

October 2019
New York, USA

Exploring Embedded Systems' Dedicated Cores for Real-Time Applications
P. H. Nallin, G. R. S. Franco, R. C. Ito, and A. R. D. Rodrigues
17th Int. Conf. on Accelerator and Large Experimental Physics Control Systems (ICALEPCS'19)

October 2019
New York, USA

Software and Hardware Design for Controls Infrastructure at Sirius Light Source
G. R. S. Franco et al.
17th Int. Conf. on Accelerator and Large Experimental Physics Control Systems (ICALEPCS'19)

May 10, 2020 **Rafael Claro Ito**