Lucas Camponogara Viera

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Currently working with design and simulation of Josephson junction-based superconducting circuits as a roadmap for large-scale fault-tolerant Quantum Computing in the NISQ era. My research interests are mainly in the field of circuit Quantum Electrodynamics and quantum-classical Machine Learning.

Education

National Taiwan Normal University - NTNU
Taipei, Taiwan
2020 – 2023 (Exp.)

- **PHD DEGREE** IN SUPERCONDUCTING QUANTUM COMPUTING
- **SUBJECT**: DESIGN AND SIMULATION OF CIRCUIT-BASED QUANTUM PROCESSORS FOR LARGE-SCALE FAULT-TOLERANT QUANTUM COMPUTING
- **CURRENT GPA**: 3.9/4.3

National Taiwan University - NTU
Taipei, Taiwan
2021 – present

- **PHD DEGREE** IN SUPERCONDUCTING QUANTUM COMPUTING
- **DUAL ENROLLMENT**

Federal University of Santa Maria - UFSM
Santa Maria, RS, Brazil
2017 – 2018

- **B.SC. DEGREE** IN CONTROL AND AUTOMATION ENGINEERING (INCOMPLETE)
- COMPLETED 180 CREDITS OF COMPLEMENTARY COURSEWORK IN COMPUTER SCIENCE (MACHINE/DEEP LEARNING)
- **AVG**: 8.04/10

Federal University of Santa Maria - UFSM
Santa Maria, RS, Brazil
2015 – 2017

- **M.SC. DEGREE** IN PHYSICS, FOCUS ON QUANTUM INFORMATION
- **THESIS**: DISTRIBUTION AND QUANTUM COHERENCE MANIPULATION IN MULTI-QUDIT SYSTEMS
- **AVG**: 7.7/10

Federal University of Santa Maria - UFSM
Santa Maria, RS, Brazil
2011 – 2015

- **B.SC. DEGREE** IN PHYSICS, FOCUS ON QUANTUM ELECTRODYNAMICS
- **THESIS**: DIMENSIONAL ASPECTS OF PHOTON MASS IN QUANTUM ELECTRODYNAMICS
- **AVG**: 7.59/10

Professional Experience

Research And Development Intern
NATIONAL TAIWAN NORMAL UNIVERSITY (NTNU)
Taiwan, Taipei, Sept. 2019 – Feb. 2020

- **Subject:** Development of an image deblurring-based Generative Adversarial Network with Python, Keras, and TensorFlow. Development of an algorithm for 3D-surface triangulation of a red blood cell for holographic tomography applications.

Software Engineer
NATIONAL INSTITUTE OF SPATIAL RESEARCH (INPE)
Brazil, July 2017 – January 2019

- **Subject:** Hands-on expertise as a full-stack developer in GUI-based software for automated research data acquisition with Bluetooth technology.

Awards

RoboWeek Challenge
Federal University of Rio Grande, RS, Brazil
2018

2ND PLACE OVERALL. DEVELOPMENT OF AN ALGORITHM (C++) FOR DRIVING A TURTLEBOT INSIDE A MAZE ENVIRONMENT WITH THE AID OF LASER SENSORS. EVENT WEBSITE: HTTP://ROBOWEEK.C3.FURG.BR/

MSc Scholarship Award (CNPq)
CNPQ, Brazilian Federal Research Funding Agency
2015

FINANCIAL AID AWARD FOR SECOND-PLACE OVERALL IN MSC ENTRANCE EXAM. MINIMUM AWARD AVERAGE OF 70%.

Publications

L. V. Camponogara, "Distribution and Quantum Coherence Manipulation in Multi-Qudit Systems," M.S. Thesis, Ctr. of Nat. and Exct. Sciences., UFSM Univ., Santa Maria, RS, 2017.

L. V. Camponogara, "Dimensional Aspects of Photon Mass in Quantum Electrodynamics," B.S. Thesis, Ctr. of Nat. and Exct. Sciences., UFSM Univ., Santa Maria, RS, 2014.

Viera, L. C.; Muralikrishna, P.; Schuch, N. J.; Makita, K., "Study of Ionospheric Plasma in the South Atlantic Geomagnetic Anomaly Region," INPE/CNPq 114397/2011-2, 2012.

Technical Production

Baseline Architectures for Convolutional Denoising Autoencoder
Taipei, Taiwan
2020
- DESCRIPTION: AUTOENCODER-BASED MACHINE LEARNING ARCHITECTURES FOR IMAGE DENOISING DEVELOPED IN PYTHON WITH KERAS AND TENSORFLOW.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/MACHINE-LEARNING-ENGINEERING/AUTOENCODER/

Autoencoder - A Comprehensive Guide
Taipei, Taiwan
2020
- DESCRIPTION: INVITED TALK ON DEEP LEARNING (2H).
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/MACHINE-LEARNING-ENGINEERING/INVITEDTALK/

Red Blood Cell 3D-Surface Triangulation
Taipei, Taiwan
2019
- DESCRIPTION: A PYTHON IMPLEMENTATION OF EVANS, E. A., AND R. SKALAK (1980) RED BLOOD CELL MODEL FOR HOLOGRAPHIC TOMOGRAPHY APPLICATIONS.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/RED-BLOOD-CELL-3D-SURFACE/

Generator Network for a GAN-based Image Deblurring Architecture
Taipei, Taiwan
2019
- DESCRIPTION: GENERATIVE ADVERSARIAL NETWORK FOR IMAGE DEBLURRING DEVELOPED IN PYTHON WITH KERAS AND TENSORFLOW.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/MACHINE-LEARNING-ENGINEERING/GAN/

Logistic Regression Based Facial Expression Recognition
Santa Maria, RS, Brazil
2018
- DESCRIPTION: MACHINE LEARNING ALGORITHM FOR CLASSIFYING HUMAN FACIAL EXPRESSIONS DEVELOPED IN PYTHON USING SCIKIT-LEARN.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/MACHINE-LEARNING-ENGINEERING/LOGISTICREGRESSION/

Kinematic Algorithm for a TurtleBot in a Maze Environment
Rio Grande, RS, Brazil
2018
- AWARD: SECOND PLACE MEDAL AWARDED TO OVERALL INDIVIDUAL TEAM WINNER OF A 24H ROBOTICS COMPETITION (ROBOWEEK CHALLENGE) AT THE FEDERAL UNIVERSITY OF RIO GRANDE (FURG), BRAZIL.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/ROBOWEEK-CHALLENGE/

Sentiment Analysis using LSTM and Word2Vec
Santa Maria, RS, Brazil
2018
- DESCRIPTION: MACHINE LEARNING ALGORITHM WITH LSTM AND WORD2VEC DEVELOPED IN PYTHON USING KERAS AND TENSORFLOW FOR INSIGHTFUL TEXT ANALYSIS ON ATTITUDE SENTIMENT EXPRESSED IN A BLOCK OF TEXT.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/MACHINE-LEARNING-ENGINEERING/

GUI-based Software for Automated Research Data Acquisition via a Secure Bluetooth Client-Server Channel.
Santa Maria, RS, Brazil
2017
- DESCRIPTION: GUI-BASED SOFTWARE FOR SENSOR DATA ACQUISITION WITH BLUETOOTH COMMUNICATION. DEVELOPED IN PYTHON WITH PYSERIAL.
- PLATFORM: WINDOWS
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/BLUETOOTH-COMMUNICATION/

Snake Game - MVC Standard
Santa Maria, RS, Brazil
2017
- DESCRIPTION: SNAKE GAME DEVELOPED IN PYTHON WITH PYGAME AND MVC STANDARD.
- HTTPS://CAMPONOGARAVIERA.GITHUB.IO/GAME-DEVELOPMENT/

Supervised Teaching in Quantum Mechanics
Santa Maria, RS, Brazil
2017
- INSTITUTION: FEDERAL UNIVERSITY OF SANTA MARIA
- WORKLOAD: 15H

Technical Skills

- Programming Languages: Python, Matlab, html5, CSS.
- Frameworks and Libraries: Tensorflow, Keras, scikit-learn, Qiskit, Cirq, sympy, Pygame, OpenCV, Bootstrap.
- Others: Git, Conda, Jupyter, Linux, LaTeX Sonnet®.

Languages

- Portuguese (Native); English (ILR Level 4); Spanish (Professional working prof.); Chinese (HSK Level 2); Italian (Limited working prof.); German (Elementary prof.).

Will be pleased to provide references upon request.