CARLOS SALVADOR CARBONE LORIO

PhD in Engineering in Computer Science
Master of Science in Mechanical Engineering
Bachelor in Electromechanical Engineering

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Saarlousier Str. 61, Munich, Germany
Nationality: Panama, Italy
Born in Panama, 21 September 1990
Languages: Spanish, English, Italian, German (intermediate), Russian (intermediate)

EXPERIENCE

Dec 2022 - Present	**Huawei Munich Research Center** Senior Robotics Simulation Researcher for Cloud Robotics	Munich, Germany

- Implementation of video game engines as robotics simulation environments
- Development of Domain Randomization along with latest trends of Generative AI
- Automated implementation of NLPs or LLMs such as ChatGPT and LLAMA
- Research with Multimodal Large Language Models
- Implementation of simulation environments considering features required for embodied AI tasks
- Implementation of simulation environment for data generation for training of video generation LLMs
- Hiring and management of master student as intern
- Hiring and management of PhD student for industrial PhD

Feb 2022 – Oct 2022	**Sapienza University of Rome** Researcher Engineer under the project AGR-O-RAMA	Rome, Italy

- Robotics research within the context of Precision Agriculture
- Aerial Swarm Robotics simulators development and maintenance within github, readthedocs and wix
- Extensive use of Linux and ROS with C++, Python
- Extensive use of Unity with C#
- Publication of research experiments in conferences and journals

Aug 23, 2017 – Dec 7, 2017	**GIC group** *Research and development intern*	Alexandria, Virginia. United States

- Due diligence for several agricultural companies
- Research for technologies and market tendencies of interest
- Customer report data analysis
- Social media and newsletter

Jan 2015, Nov 2016, Jun 2017	**Spider** *Engineer Translator*	Uruguay, Costa Rica, Nicaragua

- Spanish-English translation for the use of wind turbine platforms
- Technical assistance during installation and training of platforms

May 28, 2015 – Jan 4, 2016	**Avalon Games LLC** *3D Artist*	Online, for USA from Panama

- Handling of multiple design software for 3D design
- Quick learning of multiple software to support pipeline workflow
- Few freelancer graphic design projects
- Video game programing for personal project

Sep 2013, Jan 2015	**Servicios de plomería Victor** *Plumbing drawing design*	Panama

- Intense use of AutoCAD
- Plumbing design for civil structures like commercial establishments, buildings, etc.
- Interaction with customer architects

Jul 2011 – Dec 2016	**Freelancer** *Music professor*	Panama

- Efficient teaching to people in the range of 5 – 22 years old
- Guitar, bass guitar, drums and keyboards classes

| Jan 2012 | **VFX** | Panama |

Audio editor

- Audio edition in software for tv and radio commercials.
- Work under intense environment of advertisement industry

EDUCATION

| | **Sapienza University of Rome** | Rome, Italy |
| 2022 | *PhD in Engineering in Computer Science (funded with scholarship)* | |

	Technological University of Panama	Panama,
2018	*Master of Science of Mechanical Engineering (funded with scholarship)*	Panama
	Bachelor of Electromechanical Engineering	
2015	*Post graduate course of Video Game Development using Unity 500 hours*	
2015	*Post graduate course of Mobile Apps 400 hours*	

| | **The Washington Center** | Washington, |
| 2017 | *Panama Innovation and Competitiveness Internship Program (funded with scholarship)* | DC. United States |

SCIENTIFIC PUBLICATIONS

2022	*Photorealistic simulations of crop files for remote sensing with UAV swarms*	Drones - Systems of Information on culTural hEritage (D-SITE) 2022
2021	*Monitoring and mapping of crop fields with UAV swarms based on information gain*	The 15th international symposium on distributed autonomous robotic systems 2021
2020	*Augmentation of sunflower-weed segmentation classification with Unity generated imagery including near infrared sensor data	request by conference*	Springer Book of SIMULTECH 2020
2020	*Simulation of near infrared sensor in Unity for plant-weed segmentation classification	Included in short list for best paper in conference*	International conference on Simulation and Modeling. Methodologies, Technologies and Applications (SIMULTECH) -2020
2019	*Robotics for Precision Agriculture @DIAG*	I-Rim conference 2019
2017	*Swarm robotics as a solution to crops inspection for precision agriculture*	Panama, Engineering, Science and Technology Conference (ESTEC) - 2017

MAJOR ACADEMIC PROJECTS

NOVEMBER (2018) – January (2022), PhD THESIS: AERIAL SWARM ROBOTICS FOR PRECISION AGRICULTURE. Simulations of multiple plants and weeds to generate imagery for training of deep convolutional neural network and simulations of weed surveys using aerial swarm robotics. Simulators include Unity 3D, Flightmare with ROS, and custom C++ simulator. Experiments with real UAVs are expected to take place during the last months of the PhD during a 6 months period abroad in the Czech Technical University in Prague in Czech Republic.

APRIL (2016) - APRIL (2018), MASTER'S THESIS: CONTROL SYSTEM FOR COOPERATIVE INSPECTIONS. Simulations of multiple quadrotors in ROS, programs were written in C++. Swarm robotics was the concept to be studied and used to simulate flights during inspections of crops.

ROBOTICS/PROGRAMMING SOFTWARE

ROS (4 years)	Unity 3D (3 years)	MATLAB (1 year)	Visual Studio (2 years)
Github (4 years)	Unreal Engine 4 (3 years)	Vim (2 year)	Eclipse (1 year)

PROGRAMMING LANGUAGES

C++ (5 years)	C# (3 years)	MATLAB (1 years)	JAVA SCRIPT (1 year)
Python (4 years)	LATEX (3 years)	Dockers (2 year)	

DESIGN SOFTWARE (~2 years each)

Gimp	SUBSTANCE PAINTER	MARVELOUS DESIGNER	LOGIC PRO
Inkscape	MARI	TOPOGUN	PROTOOLS
ZBRUSH	PHOTOSHOP	HEADUS UV LAYOUT	MAYA
3DS Max	ANDROID STUDIO	MOTIONBUILDER	
AUTOCAD	VEGAS	ILLUSTRATOR	

FUNDING AND AWARDS

2021 - Sapienza University of Rome – Italy
Research funding for the call out "Bando di mobilita" for period abroad in the Czech Technical University in Prague in Czech Republic to develop experiments with swarms of UAVs to detect objects of interest.

2020 - Sapienza University of Rome – Italy
Research funding for the call out "Bando di avvio alla ricerca"

2019 – Technological University of Panama - Panama
2nd place for award to best publishing article from graduation thesis for the Master of Science in Mechanical Engineering

2018 - SENACYT – Panama
Entrepreneurship funding for the call out "Convocatoria pública para el fomento a nuevos emprendimientos 2018" to develop educational video game for mobile devices about global warming

2017 - SENACYT – Panama
Research funding for the call out "Nuevos investigadores 2017" to get computational equipment for simulation of swarm of drones for precision agriculture.

MAJOR VIDEO GAME PROJECTS

Cool Earth (Android – 10 members) - Management and programming – Video Game Funded by SENACYT – Panama
Educational video game about global warming with multiple minigames of solutions about global warming.

Cool Pipo (PC and Android – 4 developers) - Management and programming – Simplified version of Cool Earth
Educational video game about global warming from the perspective of the Antarctic using penguin sliding dynamics as a race/adventure game experience.

Shadow Strike (PC – 4 developers) - Management and programming – Proposal video game
Hack and slash game with fast paced combat including sword combos, gun ranged combat and spell combat.

Thin Ice (PC / 5 developers) - Management and programming – Submitted for contest UE4 winter jam
Fast paced gun combat with kick physics that push enemies backward with high speed movement leaving debris.

Tunnel Run (PC / 6 developers) - Management and programming – First exposed game
Obstacle avoidance game with hover car inside a tunnel including customization and boss fights with shooting dynamics.

ADDITIONAL SELF-DEVELOPMENT ACTIVITIES

Digital Marketing - Several courses with Udemy and additional conferences
Watching courses in Udemy, attending to digital and physical conferences, and reading technical documentation to handle marketing in digital platforms like social media, chatbots, data tracking, automated posting, paid advertisement and remarketing with the following platforms:

Non-Paid advertisement:

Facebook	YouTube	Reddit	Google Firebase
Instagram	Discord	Wix	Google Analytics
Later	IFFFS		Game Analytics

Paid advertisement:

| Google search | Facebook chatbots | General paid per search advertising techniques |

Additionally, attendance to management and video game small seminars for handling teams and getting funding.

Language Learning – Self thought by research in the internet and exposure with entertainment and news digital media
Languages with basics covered: Japanese, and Arabic
Other languages of interest for future learning: Portuguese.