Caio Cristiano Barros **Viturino**

PhD in Robotics and Artificial Intelligence

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+55 (71) 99993-0575 Salvador, Bahia, Brazil

Experience

Actual – May 2022 | **Artificial Intelligence Developer**
Mapzer | Brazil | Remote

- Develop and implement a system for dataset creation, visualization and maintenance;
- Communicate AI concepts to project managers and stakeholders;
- Stay up-to-date on the latest AI technologies;
- Implement analytical tools to improve decision-making;
- Reduce AI Network sizes for hardware embedding;
- Achievements :
  - Created services that reduced human annotation labour from hours to minutes using AI networks, Docker, Voxel51, and CVAT;
  - Implemented new state-of-the-art AI networks that greatly improved object detection and segmentation performance.

May 2025 – August 2022 | **Robotics Simulation Developer**
FS Studio | United States | Remote

- Robotic simulation using Isaac Sim and Isaac Lab;
- Imitation learning applied to robot manipulators;
- Digital twin and robot rigging in simulation;
- Reinforcement learning methods applied to quadruped robots;
- ROS1 and ROS2 development using Python and C++;
- Development of automatic 3D Scenario Generation Tools;

August 2024 – April 2023 | **Robotics Developer**
SENAI CIMATEC | Brazil

- Development of soft and underwater robots for inspection and maintenance of oil and gas platforms;
- Robot simulation in Isaac Sim (NVIDIA);
- ROS1 and ROS2 development using Python and C++;
- Hardware validation and test;
- Development of control and motion algorithms for soft and rigid manipulators.

July 2022 – August 2021 | **Artificial intelligence and Simulation Researcher**
Ford Motor Company | Brazil

- Design and implement :
  - Sensor Fusion algorithms for object detection and tracking based on Artificial Intelligence using Far Infrared (FIR) cameras, RGB cameras and radar;
  - Simulations for testing sensor fusion algorithms;
  - A Fleet Management System with GPS localization and other features.

August 2021 – April 2019 | **PhD scholarship holder (FAPESB) at the Federal University of Bahia (UFBA) in Electrical Engineering**
Federal University of Bahia | Brazil

- Researcher in computer systems with focus on Robotics, Artificial Intelligence, and Computer Vision;
- Development of robotic grasping pipelines using Deep Learning;
- Real implementations at the Laboratory of Robotics (LaR/UFBA) using the UR5 robot from Universal Robots, Intel Realsense D435, and Robotiq 2F-140;
- Simulations using ROS, Gazebo, Webots, and NVIDIA ISAAC Sim.

December 2019 – January 2019 | **Professor of Electrical Engineering**
Laureate International Universities | Salvador University (UNIFACS) | Brazil

- Professor of the following subjects : Classical Control Systems, Microcontrollers, Calculus II, Metrology, and Automation.

January 2019 – Maio 2017 | **MSc scholarship holder (CAPES) at the Federal University of Bahia (UFBA) in Mechatronics Engineering**
Federal University of Bahia | Salvador, Brazil
- Development of a path planning technique applied to robot manipulators to avoid collisions with nearby obstacles and control the end effector orientation simultaneously;
- Development of controllers using Robot Operating System (ROS), C++ and Python.

March 2017 – June 2015 | **Product Development Internship**
Ford Motor Company | Camaçari, Brazil
- Experience in Ford quality metrics such as BSAQ, ECB, DataCubes, Summary Report, Glidepath and Detail Report;
- Attend meetings with Ford of North America, Europe, India and China to discuss and present strategies for improving projects in progress, checking for updates to Ford's internal and government requirements, ensuring their application in projects;
- Responsible for benchmarking competing cars with a focus on ergonomics and components that have a human-machine interface (multimedia system, instrument panel and air conditioning);
- Responsible for CAD analysis using CATIA and OPTIS.

Education

December 2023 – January 2019 | **Ph.D. in Electrical Engineering**
Electrical Engineering Graduate Program | Federal University of Bahia (UFBA)
Research area : Robotics, Computer vision, and Artificial Intelligence

November 2018 – April 2017 | **M.Sc. in Mechatronics Engineering**
Mechatronics Engineering Graduate Program | Federal University of Bahia (UFBA)
Research area : Robotics, Path Planning

June 2016 – May 2011 | **B.Sc. in Mechatronics Engineering**
Mechatronics Engineering Undergraduate Program | Salvador University (UNIFACS)
Research area : Robotics, Control

Skills

Document Preparation Style	Latex, Microsoft Word
Artificial Intelligence	Segmentation, Detection, Robotic Grasping Generation
Programming Languages	Python, C++, MATLAB, SQL
Operational System	Linux (Ubuntu 16.04, 18.04, 20.04, 22.04), Windows
Simulators	Carla simulator, Nvidia Isaac Sim, Webots, Gazebo, V-REP
Technologies	Docker, Git
Frameworks	PyTorch, Tensorflow, MxNet, Caffe
Middleware	Robotic Operating System (ROS) 1 and 2
CAD/Creation Suite	Blender, Omniverse Composer, SOLIDWORKS, CATIA

Languages

Portuguese ●●●●●
English ●●●●○

Soft Skills

- Desire to learn
- Critical Thinking
- Self-management
- Teamwork

Volunteer Experience

IAC - Inspiring Actions Committee 2017

Participation in Ford Motor Company's community actions committee to distribute food and musical entertainment to people in need.

References

Ubiratan Junior
Software Test Engineer, Volvo Cars
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Dr. Andre Scolari
Professor, Federal University of Bahia
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+55 71 99667 2990

Publications

Selective 6D grasping with a collision avoidance system based on point clouds and RGB+D images. 2023
ROBOTICA
Authors : Caio Viturino and Andre Scolari
DOI : http://dx.doi.org/10.1017/s0263574723001364

6D Robotic Grasping System using Convolutional Neural Networks and Adaptive Artificial Potential Fields with Orientation Control 2021
2021 Latin American Robotics Symposium (LARS), 2021 Brazilian Symposium on Robotics (SBR), Brazil
Authors : Caio Viturino, Daniel Oliveira, André Scolari, Junior Ubiratan
DOI : http://dx.doi.org/10.1109/lars/sbr/wre54079.2021.9605472

6D Grasping Based On Lateral Curvatures and Geometric Primitives 2021
2021 Latin American Robotics Symposium (LARS), 2021 Brazilian Symposium on Robotics (SBR), Brazil
Authors : Daniel Oliveira, Caio Viturino, André Scolari
DOI : http://dx.doi.org/10.1109/lars/sbr/wre54079.2021.9605382

Convolutional Neural Networks applied in Object Identification and Robotic Grasping 2020
XXIII Congresso Brasileiro de Automática (CBA) | Santa Maria, Rio Grande do Sul, Brazil
Authors : Caio Viturino, Kleber Santana, Daniel Oliveira, André Scolari
DOI : https://doi.org/10.48011/asba.v2i1.1163

Adaptive Artificial Potential Fields with Orientation Control Applied to Robotic Manipulators 2020
21st International Federation of Automatic Control World Congress (IFAC) | Berlin, Germany
Authors : Caio Viturino, Ubiratan Junior, André Scolari, Leizer Schnitman
DOI : https://doi.org/10.1016/j.ifacol.2020.12.2706

Anti-collision System Applied To Robotic Manipulators Based on Artificial Potential Field Algorithm 2019
Anais do 14º Simpósio Brasileiro de Automação Inteligente (SBAI) | Ouro Preto, Minas Gerais, Brazil
Authors : Caio Viturino, Ubiratan Junior, André Scolari, Leizer Schnitman
DOI : 10.17648/sbai-2019-111278