Manuela Fernanda Cerón Viveros

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As a Mechatronics Engineer with a master's in computer science, specializing in AI and deep learning for computer vision, I possess a blend of theoretical and practical expertise in software development, research, and analysis, actively participating in cross-functional teams, delivering projects from definition to execution. With experience in good practices of software development for utility customer operations and deep learning frameworks for computer vision. I excel in developing and implementing AI algorithms, my experience includes training and testing ML/DL models on 2D image datasets, and I am highly motivated to expand my skills into the realm of 3D computer vision. Motivated by complex challenges, I am committed to continuous learning and apply my expertise in AI, programming, and DevOps to consistently deliver high-quality results.

Work experience

04/2022 – 03/2024: WORKING STUDENT DATA MANAGEMENT, *Natif.ai. Saarbrücken, Germany*

- Document annotation for AI model training. Analyze patterns in AI model predictions and provide valuable information to optimize annotation and model training processes.

03/2023 –01/2024: INTERNSHIP, *German Aerospace Center (DLR).Oberpfaffenhofen, Germany*

Master thesis: *A Deep learning-based framework for window information extraction from façade images with occlusions.*

- Research on state-of-the-art techniques for Deep Learning vision models, with special focus on (modal/amodal) image segmentation and occlusion handling for façade parsing.
- Employ DL tools to develop a framework capable of extracting window information from façade images with severe occlusions, combining image segmentation and generative approaches, implementing techniques such as transfer learning and data augmentation.
- Develop a pipeline for generating simulated datasets, incorporating synthetic occlusions to facilitate robust model training and evaluation.
- Proficient in Python, skilled in reading, reviewing, debugging, and implementing code, particularly using PyTorch.
- Skilled in training models on GPU hardware.

11/2019 – 04/2021: TECHNOLOGY ANALYST, *Open International. Colombia*

- Research and analysis of technological trends to drive solutions for CIS/Utility Billing Software.
- Experience in DevOps practices, including version control (Git) and containerization (Docker).
- Development of RESTful services using JAVA, deployed in tomcat server.
- Skilled in reading, reviewing, debugging, and developing Java and SQL code.
- Implementation of OAuth 2.0 client credentials flow in Tomcat and NodeJs servers, enhancing security and authentication protocols.
- Implementation of Pub-Sub Enterprise Integration Patterns (EIP) using Oracle AQ and Spring Boot.

06/ 2018 – 11/2019: PRODUCT DEVELOPMENT SPECIALIST, *Open International. Colombia*

- Research and analysis of industry trends, competitor strategies, and consumer needs in utility and telecom sectors for CIS/Utility Billing Software.

- Defined software requirements aligning functional scope with existing software.
- Performed manual functional tests to uphold product quality standards.
- Contributed to the functional documentation of software modules.
- Actively collaborated with cross-functional teams, including product definition and development teams, to share functional and technical insights and drive software enhancements.
- Experience with Agile Scrum methodology.

Digital Skills

- Proficient in Python with experience in CV libraries and ML frameworks (PyTorch).
- Experience in Java, R, SQL, Scala, C++, MATLAB, Simulink.
- Linux environment and Shell scripts.
- Experience in GitHub, Docker.

Personal Skills

● Communication ● Adaptability ● Teamwork ● Problem-solving ● Time management

Languages

Spanish: Native **English**: Fluent **French**: Intermediate **Portuguese**: Intermediate **German**: Beginner

Academic Experience

Education and training:

2021 – 2024: Msc in Computer Science, Saarland University – *Saarbrücken, Germany.*
Covering the fields of software engineering, artificial intelligence, data science, computer vision with deep learning, image processing.

2013 - 2018: BEng in Mechatronics Engineering, *Autonomous University of the West (UAO) – Colombia.*
Mathematics, linear algebra, calculus, statistics, and physics applied to engineering. Object-oriented programming, robotics, intelligent/traditional control, neurocontrol, dynamic systems, and machine learning. *Weighted GPA of 4.5/5.0*

Publications:

2018: Development of a Closed-loop Control System for the Movements of the Extruder and Platform of a FDM 3D Printing System. In NIP Digital Fabrication Conference (Vol. 2018, No. 1, pp. 176-181). Society for Imaging Science and Technology (DOI: 10.2352/ISSN.2169-4451.2018.34.176) Seminar presentation in: The Society for Imaging Science and Technology and The Imaging Society of Japan, Dresden, Germany. September 23-27, 2018.

2015 – 2017: Design and construction of a scaffold from a biomaterial that serves as support for mesenchymal stem cells (MSC) of bone marrow, for its potential use in the regeneration of the infarcted myocardium of a biomodel. Research Group in Technologies for Manufacture (GITEM), Autonomous University of the West, Colombia.

Awards and scholarships:

2020: COLFUTURO Scholarship-loan. June, 2020. Given by Foundation for the Future of Colombia.

2016: Scholarship for study abroad: "Becas Iberoamérica. Estudiantes de Grado. Santander Universidades 2016". Given by Universia Colombia.

2013, 2016: Academic Excellence Scholarship. Jan-June, 2013 and July-Dec, 2016. Given by Autonomous University of the West.