**Daniel Vargas**

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# SUMMARY

Daniel is a results-driven professional with over 16 years of diverse experience in product development, engineering, process improvement, and cutting-edge technologies including machine learning, artificial intelligence and LLMs. Adept at leveraging advanced data analytics to drive operational excellence and streamline processes across multiple industries, including neuroscience, medical devices, aerospace, railways, consulting, banking, fitness, and consumer products. Demonstrated track record of delivering innovative solutions, optimizing business performance, and enhancing customer experiences. Proven ability to lead cross-functional teams, identify opportunities for growth, and implement strategic initiatives.

Areas of Expertise:

* Artificial Intelligence
* Machine Learning and Deep Learning
* Large Language Models (LLMs), Generative AI
* Machine Learning Operations (MLOps)
* Product Development and Engineering
* Process Improvement
* Data Analytics and Statistical Modeling
* Consulting

# Main Technologies: Python, Kotlin, SQL, Tensorflow, Pytorch, Azure, GCP, AWS, OpenAI, Hugging Face, W&B, ONNX.

# PROFESSIONAL EXPERIENCE

**Sr. Machine Learning Engineer** Montreal, QC

FightCamp Oct 2023 – Jun 2024

* Led the development of the end-to-end machine learning infrastructure and pipeline for human activity recognition, from data collection to on-device inference
* Developed and deployed neural networks for detecting and classifying boxing punches and movements using IMU (accelerometer and gyroscope signals) data
* Modernized the punch recognition pipeline with state-of-the-art infrastructure (Tensorflow Lite)
* Initiated machine learning democratization in the company through knowledge and results sharing
* Deployed models on Android edge devices, optimizing performance and ensuring real-time processing capabilities
* Designed and implemented models experiments tracking (Weights & Biases) to make informed decisions based on data
* Developed a variational autoencoder (VAE) to generate motion synthetic data

**Director, AI Development** Montreal, QC

Innodem Neurosciences Feb 2021 – Sep 2023

* Conducted code refactoring (Python) to improve overall codebase quality, readability, accessibility and maintainability, ensuring PEP-8 and OOP practices in the process
* Ensured compliance with Software of Unknown Provenance (SOUP) regulations, ensuring that all software components used in the system were adequately evaluated for quality and security
* Ensured compliance with electronic personal health information (ePHI) privacy and security regulations: HIPAA, PIPEDA, and GDPR
* Lead the SCRUM process, facilitating daily stand-ups, sprint planning, retrospective meetings, and ensuring that the team is adhering to agile principles and best practices
* Conducted code reviews, ensuring that code quality standards were met, and that the codebase is maintainable and scalable
* Managed priorities, ensuring that the team is working on the most critical and impactful features for the business

**Deep Learning Engineer** Montreal, QC

Innodem Neurosciences Feb 2019 – Jan 2021

* Trained and improved neural network (CNN) models for eye-tracking applications (Tensorflow, Scikit-Learn, and XGBoost)
* Created and operationalized the end-to-end deep learning pipeline that covers data engineering and processing, model building, model training and evaluation, and model deployment (Python, SQL)
* Developed and implemented model deployment capabilities (MLOps) for both on-server (ONNX, TFLite) and on-the-edge (CoreML, iOS) scenarios, also reducing model deployment cycle time from hours to minutes
* Reduced deployed models' latency through quantization and pruning, achieving real-time (60 FPS) eye gaze predictions on-device, without losing precision
* Designed and implemented the core neural network (ResNet) architecture and training pipeline for diagnostics applications
* Developed on-device model fine-tuning (transfer learning under 5 seconds) code to enable personalized predictions for individual users
* Reduced model training pipeline duration (~13%) using mixed precision and multi-GPU (distributed) training

**Data Science Consultant [Contract]** Remote

Master Data Analysis Sep 2020 – Mar 2023

* Developed and facilitated a comprehensive data science training program for a team of 9 data analysts, covering topics ranging from data extraction to model deployment, resulting in a significant increase in team members' technical proficiency and ability to deliver results
* Coached and mentored data science projects (banking industry), providing guidance and expert advice to ensure that business results were achieved
* Developed all program materials, including code, presentations, assignments, and projects, resulting in a cohesive and effective training program that met the needs of the team and the organization
* Setup and managed Azure infrastructure for facilitation sessions and projects execution

**Sr. Business Systems Analyst, Operational Technology** Montreal, QC

Canadian National Mar 2018 – Dec 2018

* Elicited, analyzed, and decomposed over 118 L1 business requirements (process and tools) from internal and external partners, within an agile and continuous delivery environment
* Acted as liaison between business and implementation teams
* Created and validated current and future-state processes and tools with business partners
* Developed a sentence similarity model (NLP) to decrease support requirements management, decreasing elicited requirements redundancy by 8%
* Shaped the requirements phase based on client dependencies and scope

**Machine Learning Engineer [Contract]** Remote

Crowdbotics Nov 2017 – Apr 2018

* Developed a recommendation system for an audio streaming service for wellness content, leveraging machine learning techniques to provide personalized recommendations to users

**Project Management Lead, Electrical Systems and Fuel Inerting** Montreal, QC

Bombardier Aerospace Jul 2017 – Mar 2018

* Drafted and executed projects mandate
* Mobilized different functions in order to achieve project deliverable
* Supported the team through the initiation, planning, execution, monitoring and control, and closure of the different aircraft development phases, handled under the change management process, to ensure completion within the scope, schedule, and budget established in the Statements of Work (SOW) and Product Change Requests (PCR)
* Coordinated technical integration activities with input from internal and external (supplier) stakeholders

**Continuous Improvement Specialist (ITPLM)** Montreal, QC

Bombardier Aerospace Aug 2014 – Jul 2017

* Coached and lead continuous improvement projects and workshops (VSM, visual management systems, kaizen, decision-based-schedules, root cause analysis, etc.)
* Software interface definition documents (IDD) for aircraft builds: review and approval lead time reduction from 40 to 30 days, rework rate reduced from 33% to 7%
* Structures dataset release process: first time right rate from 13% to 71%, lead time reduced from 26 days to 19 days
* Aircraft serialization process: discrepancies from 50% to 0%, ASL 24hr generation turnaround, total manual operations reduced from 111 to 57
* Outsourcing engineering services lead time from 186 to 50 days
* Machine learning model to predict most critical load cases from external loads in conceptual design
* Technical publication development process: lead time reduced from 103 to 10 days, first time right rate from 50% to 91%
* In-Service customer issues process: lead time reduced from 290 to 170 days

**Lean Six Sigma Black Belt Consultant [Contract]** Santo Domingo, D.R.

Quality Global Business Jul 2012 – Dec 2012

* Consulted, mentored and coached 21 Lean Six Sigma Black Belt projects in two nationwide industrial parks (medical devices, electrical/electronic devices, packaging); for USD$1M+ in yearly savings across 9 companies
* Lean Manufacturing implementation project, improving lean assessment score from 0.75 to 4.0 in 16 weeks
* Worked directly with clients to ensure expectations and objectives are met and guidelines are followed

**Technical Assurance & Validation Engineer II** Santo Domingo, D.R.

Johnson & Johnson Nov 2010 – Jul 2012

* Establishment of Site Validation Master Plan (VMP) and implementation of new validation procedures and approaches for computerized systems, equipment / process, products, cleaning, facilities / utilities and test methods
* Designed and conducted 60+ design of experiments (DOE) to define / improve processes parameters, controls, and limits
* Planned and executed 80+ validations and revalidations focused on process improvement and corrective actions / preventive actions (CAPAs)
* Lead Major product packaging improvement (3 product lines) through researching and developing PET forming film. This allowed all 3 product lines to be packaged in the same equipment with the same parameters and the same tooling, reducing change over time by ~66% and material usage by 21%

**CEA Medical Manufacturing** Santo Domingo, D.R.

Manufacturing Engineer Jul 2009 – Nov 2010

* Successful manufacturing system transfer for: 7 steerable guide wires families, 2 ECG leads families and 3 cryogenic devices families
* Engineering project that yielded USD$73K+ in yearly savings through tooling design and build (silicone coating equipment)
* Lean Six Sigma project for USD$31K+ on yearly savings and over a 2% throughput increase in sub-assemblies manufacturing
* Sub-assemblies area re-layout for 23%+ reduction in overall production floor utilization

**Process Engineering Supervisor** Santo Domingo, D.R.

Andin International Jun 2008 – Apr 2009

* Lead project for diamonds usage increase (11%), improving precious stones life cycle and inventory management
* Modularization of the workshop-based production system while reducing 16% + of the assembly space usage

**Intermodal and Equipment Control Coordinator** Santo Domingo, D.R.

Maersk Line Jul 2007 – Jun 2008

* Lead the SAP deployment and implementation in the Caribbean cluster (Central America – Caribbean)
* USD$78K+ yearly savings through inland transportation network re-design and corridors rearrangement
* USD$40K+ yearly savings through empty equipment inventory management and optimization

# EDUCATION

**MEng. Engineering Management** Ottawa, ON

University of Ottawa 2013 - 2014

**BEng. Industrial Engineering** Santo Domingo, D.R.

Instituto Tecnológico de Santo Domingo (INTEC) 2004 - 2008

# CERTIFICATIONS

* **Azure Data Scientist Associate –** Microsoft (Nov 2020)
* **Microsoft Professional Program in Artificial Intelligence –** Microsoft (Jul 2018)
* **Certified Lean Six Sigma Black Belt (CLSSBB) -** Six Sigma Development Group, LLC (Jun 2012)