

# Daniel Vargas

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<https://github.com/danvargg>

## Summary

Daniel is a highly skilled engineer with over 15 years of experience delivering sustained results and driving effective change for industry-leading companies and for fast-paced, dynamic small companies in various sectors, including aerospace, medical devices, transportation, railways, consumer goods, and medical diagnostics. Over the last 7 years, he has developed deep expertise in AI, deep learning, and machine learning, focusing on designing, developing, and implementing advanced technologies that deliver business value and competitive advantage for his clients and employers. He is highly regarded for his ability to develop and optimize machine learning models, leverage computer vision techniques, and drive continuous process improvement.

- Machine learning / deep learning models development and optimization
- Computer vision techniques and applications
- Data analysis, processing, and visualization
- Algorithm development and optimization
- Model deployment and performance optimization
- NLP techniques and applications
- MLOps techniques and applications
- Team management, coaching, and training
- Open-source contributions
- CI/CD (code quality and unit tests)

## Experience



### Director, AI Development

Innodem Neurosciences

Feb 2021 - Apr 2023 (2 years 3 months)

- Developed novel algorithms to analyze diagnostics signals through eye tracking
- Contributed to the open source library (<https://github.com/apple/coremltools/releases/tag/6.2>) to supply internal deployment needs, improving the performance and usability of the library for other developers
- Conducted code refactoring to improve overall codebase quality, readability, accessibility and maintainability, ensuring PEP-8 and OOP practices in the process
- Implemented comprehensive unit tests and code coverage for the deep learning pipeline, ensuring that the system is reliable and robust
- Successfully executed experiments to train eye tracking models with synthetic data, improving model overall predictions performance
- 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
- Ensured that codebase, systems, documentation, and processes comply with ISO 27001
- Collaborated with 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
- Defined, planned, and assigned tasks to team members, ensuring that each team member has a clear understanding of their responsibilities and deadlines
- Managed priorities, ensuring that the team is working on the most critical and impactful features for the business
- Completed federal government R&D grant documents, securing funding for the project and ensuring that all documentation requirements were met
- Successfully implemented deep learning and diagnostics white papers
- Developed CI/CD pipelines for machine learning code unit tests and quality



## **Machine Learning / Data Science Consultant**

### **Master Data Analysis**

Sep 2020 - Apr 2022 (1 year 8 months)

- 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, 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 Azure infrastructure for sessions and projects



## **AI / Deep Learning Engineer**

### **Innodem Neurosciences**

Feb 2019 - Jan 2021 (2 years)

- Trained and improved neural network models for eye tracking applications: Pigio Gaze to Speech (<https://apps.apple.com/ag/app/pigio-gaze-to-speech/id1399641303>) and Pigio ICU Gaze to Speech (<https://apps.apple.com/ag/app/pigio-icu-gaze-to-speech/id1466945385>)
- Successfully upgraded code base from Tensorflow 1.X to 2.X, ensuring that the latest deep learning framework is being utilized
- Developed and implemented model deployment capabilities for both on-server (ONNX, TFLite) and on-the-edge (CoreML, iOS) scenarios
- Optimized deployed model inference to achieve real-time eye gaze predictions on-device
- Created and operationalized the end-to-end deep learning pipeline that covers data processing, model building, model training and evaluation, and model deployment
- Designed and implemented an initial neural network (ResNet) architecture and training pipeline for the diagnostics application
- Designed and implemented neural network experiments tracking to make informed decisions based on data
- Developed on-device model fine-tuning code to enable personalized predictions for individual users
- Developed server-side model fine-tuning through backend API
- Successfully implemented deep learning and diagnostics white papers
- Developed image processing algorithms to improve models training and inference metrics



## **Sr. Business Systems Analyst (Operational Technology)**

CN

Mar 2018 - Dec 2018 (10 months)

- Elicited / gathered, clarified, documented, analyzed, prioritized, and decomposed business requirements (process and tools) from internal and external partners, within an agile and continuous delivery environment
- Elicited and translated business requirements into process and solution requirements
- Acted as liaison between business and implementation teams
- Lead portion of the strategic roadmap defined by the Product Manager
- Performed process analyses and improvements backlog assessments (DMAIC, PMCS)
- Shaped the requirement phase based on client dependencies and scope
- Created and validated current and future-state processes and tools with business partners



## **Machine Learning Engineer**

Crowdbotics

Nov 2017 - Apr 2018 (6 months)

- Developed a recommendation algorithm and model for Aura (<https://www.aurahealth.io/>), an audio streaming service for wellness content, leveraging machine learning techniques to provide personalized recommendations to users
- Designed and implemented the algorithm using state-of-the-art machine learning libraries and frameworks, resulting in a high-performance and accurate model



## **Continuous Improvement Specialist (ITPLM)**

BOMBARDIER

Aug 2014 - Mar 2018 (3 years 8 months)

- Coached and lead continuous improvement projects and workshops (VSM, visual management systems, kaizen, decision-based-schedules, knowledge diagrams, etc.):
- Challenged current business processes and mindset to ensure sustainable improvements
- Developed visual management systems (e.g. engineering design update and release, parts serialization)
- Identified the framework for data migration project
- Supported a 'Hansei' for software development project
- Visualized and eliminated waste through Value Stream Mapping (VSM) projects
- Identified root causes by performing formal technical problem solving and root cause analysis



## **Data Scientist**

baseline.io

Nov 2017 - Dec 2017 (2 months)

- Developed a dashboard application to track, visualize, and analyze mobile telemetry data, providing insights into user behavior and system performance
- Designed and implemented the application using modern data visualization libraries, resulting in a highly interactive and user-friendly interface



## **Data Scientist**

SciBase.co

Sep 2017 - Dec 2017 (4 months)

- Designed and implemented an initial authors disambiguation algorithm and model using Natural Language Processing (NLP) techniques to accurately identify and disambiguate authors with similar or identical names
- Conducted extensive research and analysis to identify the most appropriate NLP techniques and algorithms to use in the development of the disambiguation model



### **Lean Six Sigma Black Belt Consultant**

QualityGB

Jul 2012 - Dec 2012 (6 months)



### **Technical Assurance & Validation Engineer II**

Johnson & Johnson

Nov 2010 - Jul 2012 (1 year 9 months)



### **Manufacturing Engineer**

Jul 2009 - Nov 2010 (1 year 5 months)



### **Process Engineering Supervisor**

Andin International

Jun 2008 - Apr 2009 (11 months)



### **Intermodal and Equipment Control Coordinator**

A.P. Moller - Maersk

Jul 2007 - Jun 2008 (1 year)

## **Education**



### **DeepLearning.AI**

Machine Learning Engineering for Production (MLOps) Specialization, Machine Learning Operations

Nov 2021 - Nov 2021

<https://github.com/danvargg/folio/blob/master/docs/mlops.pdf>



### **OpenCV**

Computer Vision II, Computer Vision

Dec 2020 - Feb 2021

<https://github.com/danvargg/folio/blob/master/docs/opencv2.pdf>



### **OpenCV**

Computer Vision I, Computer Vision

Apr 2020 - Jul 2020

<https://github.com/danvargg/folio/blob/master/docs/opencv1.pdf>



### **Udacity**

Data Engineering Nanodegree, Data Engineering

Oct 2019 - Mar 2020

[https://github.com/danvargg/folio/blob/master/docs/udacity\\_dend.pdf](https://github.com/danvargg/folio/blob/master/docs/udacity_dend.pdf)



### **Udacity**

Machine Learning Engineer Nanodegree, Machine Learning

Sep 2019 - Dec 2019

[https://github.com/danvargg/folio/blob/master/docs/udacity\\_mlend.pdf](https://github.com/danvargg/folio/blob/master/docs/udacity_mlend.pdf)



### **Microsoft**

Microsoft Professional Program in Artificial Intelligence, Artificial Intelligence

Apr 2018 - Jul 2018

[https://github.com/danvargg/folio/blob/master/docs/MPP\\_AI.pdf](https://github.com/danvargg/folio/blob/master/docs/MPP_AI.pdf)



### **DeepLearning.AI**

Deep Learning Specialization, Deep Learning

Mar 2018 - Mar 2018

<https://github.com/danvargg/folio/blob/master/docs/Coursera%2BDeep%2BLearning%2BSpecialization.pdf>



### **Johns Hopkins University Advanced Academic Programs**

Data Science Specialization, Data Science

Jan 2017 - Jun 2017

<https://github.com/danvargg/folio/blob/master/docs/Coursera%2BData%2BScience%2BSpecialization.pdf>



### **University of Ottawa**

Master of Engineering (MEng), Engineering Management

2013 - 2014



### **Instituto Tecnológico de Santo Domingo**

Bachelor of Engineering - BE, Industrial Engineering

2004 - 2008

## **Licenses & Certifications**



**Certified Lean Six Sigma Black Belt** - Six Sigma Development Group, LLC



**Azure Data Scientist Associate** - Microsoft

Issued Nov 2020 - Expires Nov 2022

H573-8605

## **Skills**

Communication • Artificial Intelligence (AI) • Deep Learning • Machine Learning • Data Science • TensorFlow • Scikit-Learn • PyTorch • Data Analysis • JIRA