

Joshua Albert, PhD

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SUMMARY

I am a data scientist and physicist who seeks to use my expertise in machine learning, computer vision, physics, data analysis, and general problem solving to make the world a better place.

WORK EXPERIENCE

- **Six Neutrino Solutions** Boynton Beach, FL
November 2024-Present
Founder/Freelance Consultant/Data Scientist/Developer
 - **Data Science Consultancy** Founded Six Neutrino Solutions LLC, providing end-to-end data science solutions, including advanced analytics, machine learning models, and scalable software applications tailored to client needs.
 - **On-Device CV** Redesigned client's industrial inspection computer vision solution to run rapidly, on-edge, with no loss of accuracy.
- **Values Driven/Energy IQ** Boynton Beach, FL
October 2023-October 2024
Data Science Consultant
 - **Technology Consultation** Provided fractional-time executive data science and energy consulting for Values Driven, a renewable energy startup focused on solar and batteries. This included technology guidance and teaching solar and battery system design to the team.
 - **VP-level Consultation** After a merger, transitioned full-time to Energy IQ, a microgrid and building automation company, guiding technology strategy and mentoring colleagues during a scale-up phase.
- **Levatas** West Palm Beach, FL
November 2018-July 2024
Data Scientist/AI Scientist/Principal Data Scientist
 - **Gauge CV Model** Developed software combining a custom deep neural network with other supervised ML methods, more traditional image processing techniques, and image transformation algorithms to detect and read analog gauges. This software is currently used by several large companies to facilitate industrial inspection, and has been specifically highlighted in marketing by Boston Dynamics.
 - **Automated Industrial Inspection Tools** Oversaw the development and deployment of the full array of computer vision models for the Levatas Cognitive Inspection Platform, installed on Boston Dynamics Spot units. Models included gauge, IR thermal anomaly detection, tool organization, and sight-glass reading.
 - **Multi-mode CV** Developed custom model combining thermal and visible images from a robotic platform to evaluate the condition of factory conveyor belt bearings and identify defective or failing equipment.
 - **Operations Optimization Analyses** Provided analyses of operations and procedures for a major power company in multiple projects to increase efficiency, based on tabular and free-text data.
 - **Power Delivery CV** Developed several models to detect anomalies in substation and distribution power systems.
- **Indiana University Center for Exploration of Energy and Matter** Stanford, CA/Bloomington, IN
July 2012-July 2017
Postdoctoral Researcher
 - **Principal Investigator** Led international team to measure n inelastic scattering, managed analysis, and published results.
 - **EXO-200 Collaboration Leadership** Led Monte Carlo simulation group, coordinated 24-hour detector monitoring, founded and led international team for a novel data analysis project with published results.
 - **Data Analysis** Played key roles in several published analyses, combining heterogeneous data streams from different sensors into coherent and rigorous measurements.

- **Hardware** Designed and built apparatus for precision low-temperature electronics testing. Monitored and was responsible for operations on ultra-sensitive cryogenic particle detector.
- **Publications** Authored or co-authored 16+ published papers in journals including Science and Nature.

- **Duke University Department of Physics**
Research Associate

Durham, NC
August 2006 - July 2012

- **T2K Data Analysis** Co-produced official major published analysis for 500-member international collaboration, and led statistical analysis and sensitivity calculations for experimental data.
- **Publications** Authored or co-authored 21+ published papers, along with PhD dissertation on neutrino oscillation.
- **Recognition** 2016 Breakthrough Prize in Fundamental Physics

EDUCATION

- **Duke University**
PhD (Physics)

Durham, NC
March 2012

James B Duke Scholar · “Indication of Electron Neutrino Appearance in an Accelerator-Produced Muon Neutrino Beam”

- **Penn State University**
Bachelor of Science with honors (Physics)

State College, PA
August 2006

Minor in Mathematics · *Barry M. Goldwater Fellow*

SKILLS SUMMARY

- **Languages** Python, C++, SQL, Bash, Perl, FORTRAN
- **Frameworks** Pytorch, Tensorflow, Flask, Scikit-learn, OpenCV, Pandas, Matplotlib, ONNX, Plotly, Scikit-image
- **Models and Methods** Resnet, Faster R-CNN, YOLO, EfficientDet, Random Forests, K-means, LightBGM, LLM Integration, Data transformations, Monte Carlo simulation
- **ML Ops** AWS Sagemaker, OpenAI API, LLAMA models, AWS EC2, JSON, YAML, model optimization and evaluation, N8N, Azure APIs
- **Dev Tools** Jupyter, Docker, Git, Postman, Visual Studio Code, Vim, Jira
- **Miscellaneous Experience** Presentations, mentoring, large and small collaborations, journal publication writing, agile, building automation controls, solar and battery simulation, experimental hardware design, robotics