

Nelson A. Colón Vargas, Ph.D.

Washington,
District of Columbia,
20009, USA

Spotify Verified Artist: *Nel Abdiel* 

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EXPERIENCE

U.S. Food & Drug Administration - Office of the Commissioner, DC.

Artificial Intelligence Lead - Responsible AI Official

Jun 2023–Present

As the highest ranking AI Official at FDA, I serve as an advisor to the C-Suite at FDA, providing strategic leadership and guidance on the applied use of Artificial Intelligence (AI), including Large Language Models (LLM), Natural Language Processing (NLP) and Machine Learning (ML) as well as policy input to the Department of Health and Human Services.

- Promote and adopt best practices through coaching, governance establishment, and knowledge collation, prioritizing collaborative and user-centered development with a product mindset for sustainable solutions in AI/ML projects. As a member of the Senior Leadership Team, I provide back-end operations thought leadership for the entire enterprise.
- Serve as a AI & Data Subject Matter Expert for the Interagency Collaboratory initiative between Defense Health Agency, Health and Human Services and the Department of Veterans Affairs.
- Lead a growing AI team to advance the agency's strategic vision for AI, developing projects that use AI/ML/LLM/NLP/RPA technologies to address high-value enterprise needs, as well as provide policy input to the Department of Health and Human Services.
- Serve as AI Subject Matter Expert to the White House Cancer Moonshot initiative.
- Boards, Councils and Committees:
 - Serve as the Chair of FDA's AI Governance and Advisory Board overseeing the agency's AI Strategy, Playbook and Position.
 - Member of the Machine Learning and AI Subcommittee at the White House National Science and Technology Council.
 - Member of the AI Subcommittee of the FDA Digital Health Advisory Board.
 - Member of the AI R&D Working Group at the White House.

U.S. Digital Service, Executive Office of the President, The White House

Principal AI & Cybersecurity Lead

Nov 2021–Jun 2023

Office of the CTO at the Department of Veterans Affairs:

- Provided technical guidance on Generative AI and its implementation.
- Assisted with Discovery Sprints and Technical planning for Data Science projects across the VA.
- Served as a Subject Matter Expert on the implementation of AI/ML for the Veterans Benefits Administration.

Defense Digital Service, *Department of Defense*, The Pentagon, DC.

Details of projects and performance limited due to the sensitive nature of the work in regard to national security.

- Fostered partnerships both internally and externally with other organizations in the Department of Defense and Intelligence Community to facilitate collaboration.
- Managed the capacity planning of the Data Science and Data Engineering teams to ensure fair and healthy work balance.
- Represented DDS and the CDAO in expert panels discussing Responsible AI and AI Ethics in relation to the Department of Defense.
- Stood up the Data Science Community of Practice across the Office of the Chief Digital & AI Officer.
- Provided technical leadership on the development of an AI-driven Insider Thread Detection platform for the Defense Counterintelligence and Security Agency (DCSA).
- Assisted the National Cyber Investigative Joint Task Force (FBI - NCIJTF) in the development of an AI-driven continuous monitoring tool that detects code leakage.

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EXPERIENCE

White House Presidential Innovation Fellows, Washington, DC.

Principal AI Lead - *Entrepreneur in Residence*

Jan 2019–Oct 2021

Claims Attributes API

- Spearheaded the development and deployment of the Claims Attributes API, revolutionizing the VA's benefit claims process.
- Significantly reduced Veteran's decision wait time by 7-11 days, resulting in improved access to benefits.
- Achieved a remarkable 27-fold decrease in manual claim establishment, leading to operational efficiency.
- Generated annual recurrent savings of 10 million for the Department of Veterans Affairs through innovative AI solutions.
- Successfully built and led a high-performing interdisciplinary team of 25 professionals, including designers, developers, data engineers, business analysts, and cloud architects.
- Presented progress and performance updates to key stakeholders, including VA CTO, VA CIO, and executives from the Department of Veterans Affairs, General Services Administration, and the White House.
- Identified and pursued opportunities for expanding the Benefit Product Portfolio, enhancing the organization's strategic growth.

Redesign of Fraud Waste & Abuse Operations

- Led the transformation of Fraud Waste & Abuse operations, shifting from postmortem investigations to real-time detection.
- Strengthened data architecture and initiated a seamless cloud migration.
- Forged partnerships with private sector vendors and security groups, enhancing data accuracy and reducing detection time.

Additional Duties

- Collaborated with USDS, Department of Labor, NSF, and Department of Transportation on AI-related initiatives, demonstrating expertise and leadership.
- Drafted comprehensive AI and Cybersecurity Strategy and Policy for the Intelligent Transportation Systems Joint Program Office at the Department of Transportation.
- Integral in establishing the AI Community of Practice at the Technology Transformation Services, General Services Administration, unifying over 500 members from various government agencies.
- Played a pivotal role as a Subject Matter Expert in AI and Cybersecurity in response to critical incidents like Solarwinds.

Microsoft, Redmond, WA / Humacao, P.R.

Data & Applied Scientist II - Intellectual Property Protection & Solutions

Feb 2018–Jan 2019

- Developed algorithms to detect Microsoft product keys suspicious activations based on time and geospatial data using techniques like Topological Data Analysis, Time Series Anomaly Detection with Python packages like Pandas, NumPy and SciKit-Learn among other libraries.
- Built and maintained Machine Learning models to detect and prevent malicious and scripted registrations and intrusions, with False Positive and False Negative rates of less than 2.5%, reducing manual revision by 87%.
- Led bi-weekly collaborative discussions with Forensic Investigators and Risk Managers to analyze emerging attack vectors.

Soteria - Tailored Cybersecurity Solutions, Charleston, S.C.

Lead Data Scientist

Jun 2016–Jan 2018

Led a cross-functional team consisting of Data Engineers, Software Engineers, and Security Analysts to revamp Soteria's DNSense product, transitioning it from a rule-based prototype to an automated Machine Learning solution for detecting and reporting suspicious domain registrations. Spearheaded the ideation, development, and deployment of Soteria's proprietary NLP/NLU phishing detection solution.

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ACADEMIC AFFILIATIONS

Columbia University - *School of International and Public Affairs*
Adjunct Faculty - *Lecturer*
Computing in Context (INAFU 6006) - *Graduate Course*

Sep 2022–Present

Teaching a class of 60 graduate policy students, every Fall semester, the practical tools and techniques of Data Analytics and Data Science, and the Ethics and Responsibilities that come from developing products for Social Good. In charge of curriculum development, lab creation and the supervision of 5 Graduate Teaching Assistants.

EDUCATION

University of Iowa, Iowa City, IA
Ph.D., Mathematics
University of Cambridge, Cambridge, UK
M.St., AI Ethics and Society - *In Progress*
University of Texas, Austin, TX
M.Sc., Artificial Intelligence - *In Progress*
University of Puerto Rico, Rio Piedras, San Juan, PR
B.Sc., Mathematics

CERTIFICATES & PROGRAMS

Partnership For Public Service, Washington, D.C.
Artificial Intelligence Federal Leadership Program
Aspen Technology Policy Hub, Washington, D.C.
Writing and Communicating for Policy
Policy Impact
The Data Incubator, Washington, D.C.
Data Science Certificate
Berklee College of Music, Boston, MA
Songwriting Professional Certificate

TALKS/PANELS & AWARDS

Artificial Intelligence for Regulatory Review - FDA	Oct 2023
Leveraging AI Responsibly - Ponce Health Science University	Oct 2023
The AI Landscape at FDA (Keynote) - FDA's 11th Scientific Computing Days	Sep 2023
Truths and Myths about AI - Asociación de Periodistas de Puerto Rico	Aug 2023
Embracing Artificial Intelligence - Ciencia Boricua (Radio Interview)	Jul 2023
AI, Civic Tech, and Public Policy - SIPA — Columbia University	Jul 2023
Ethical Uses of AI in the Federal Government - ATARC	Aug 2022
Can AI Help Increase Fairness and Equity? - AI & Data Roundtable, ATARC	Jun 2022
Predictions from the Pros: The Future of AI - Digital Transformation Submit, ACT-AIC	Mar 2021
STEM and Race: Can We talk? - University of Iowa	Mar 2021
AI to Accelerate Claim Processing - ASAM Roundtable, Partnership For Public Service	Jun 2020
Special Act Award - Technology Transformation Services, General Services Administration	

PUBLICATIONS

The Localized Skein Algebra is Frobenius, Nel Abdiel and Charles Frohman, *Algebraic and Geometric Topology* Volume 17, Issue 6, October 2017.
Frobenius Algebras Derived From The Kauffman Bracket Skein Algebras, Nel Abdiel and Charles Frohman, *Journal of Knot Theory and its Ramification*, Volume 25, Issue 04, April 2016.