



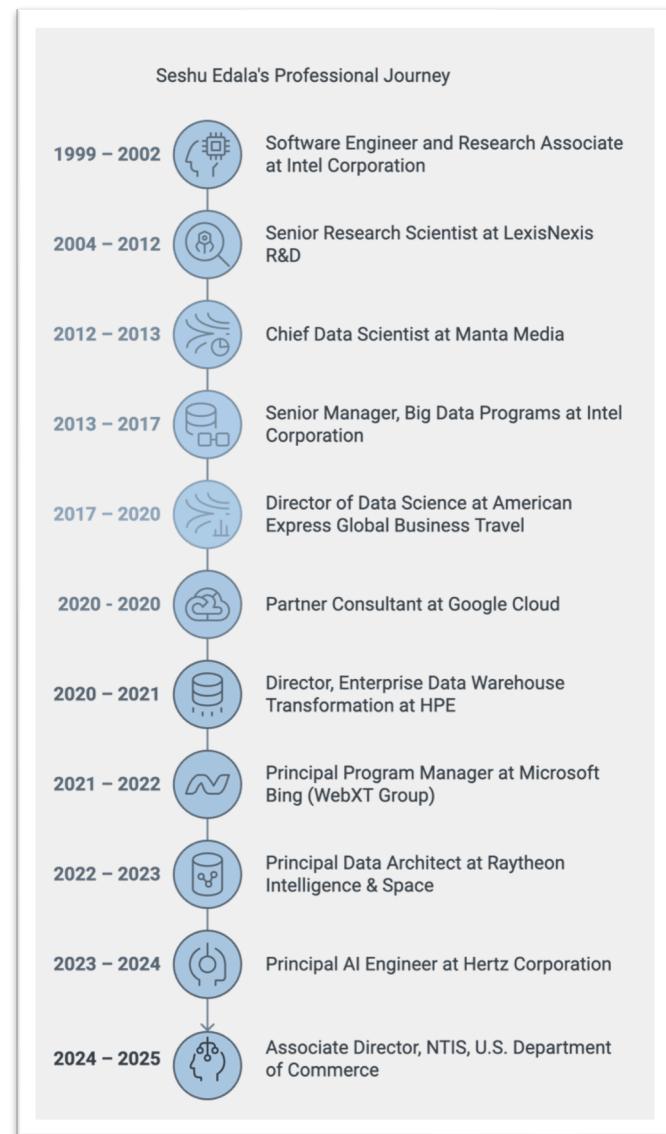
Summative

Innovative, hands-on data science, cloud, and AI leader with over 25 years of experience spanning software engineering, research science, enterprise architecture, and executive management roles. Proven ability to lead end-to-end data modernization, ML/AI product development, cloud transformation, and business intelligence at Fortune 50 companies, startups, and federal agencies. Deep expertise across legal, financial, travel, manufacturing, defense, and public sector domains. Seshu is a true practitioner who deeply engages in both theoretical research and hands-on engineering of high-impact products, businesses, and real-world use cases. He is the creator and founder of multiple AI and data ventures.

Enya Media Works – A generative AI visual-media startup focused on intelligent restoration, enhancement, and personalization of vintage audiovisual content. Enya delivers advanced capabilities in frame-by-frame video upscaling, colorization of black-and-white footage, multilingual dubbing, character and voice injection, and automated restoration of film artifacts and audio clarity.

gnyan.ai – An enterprise-grade AI promptware delivery company that focuses on the development and operationalization of domain-specific mixed-intelligence vibe-coded software solutions tailored for enterprises, research organizations, and federal agencies. gnyan.ai was designed to address the gap in business-aligned, secure, and operationally contextual AI that avoids vendor lock-in and overexposure risk associated with public LLMs.

data-bloom.com – A high-impact machine learning and data science consultancy that delivers advanced analytics solutions for some of the world's largest enterprises. The firm specializes in developing near real-time analytics engines, building data pipelines, and operationalizing AI/ML at scale within complex business ecosystems. Seshu and his team have built solutions that handle massive datasets, predictive forecasting models, intelligent





alerting systems, and embedded decision optimization tools in sectors ranging from travel, finance, and retail to supply chain and healthcare.

fedworks.ai – A Small Business Administration (SBA) registered technology services entity delivering a suite of integrated solutions focused on the federal collective. Its mission is to serve as a trusted, sovereign digital partner for U.S. federal agencies seeking next-gen capabilities in AI, cloud modernization, RPA, accessibility, apps, and analytics. Under Seshu's leadership, fedworks.ai has architected secure, compliant, and extensible cloud-native solutions that deliver functionality such as OCR-driven digitization of paper assets, AI-enhanced search across legacy data stores, generative co-pilots for internal federal workflows, and low-code/no-code transformation kits for federal process modernization.

Career Experience

2024 - Present, Associate Director, NTIS, U.S. Department of Commerce

Leading the transformation of NTIS into a federal AI and data consultancy. Designed AI/RPA/Cloud blueprints, created federal GenAI copilots, and established strategic innovation partnerships.

2023 - 2024, Consulting AI Contractor, Mantech (DHS TASPD Program)

Delivered applied AI models for narcotics interdiction and financial crime networks. Deployed secure LLM copilots and a multilingual assistant suite for field agents.

2023 - 2024, Principal AI Engineer, Hertz Corporation

Architected MDM pipelines resolving 5x CRM duplications, built NLQ analytics, and developed semantic data cataloging tools for enterprise-wide governance.

2022 - 2023, Senior Data Architect, Raytheon Intelligence & Space

Directed .gov cloud migration and built advanced lead-time, MRP, and simulation models (PFEP/Digital Twins) for mission-critical defense logistics.

2021 - 2022, Principal Program Manager, Web Indexing, Microsoft Bing

Led Bing's index scale-up to 1 trillion pages; conducted core R&D on semantic indexing, embedding quantization, and hybrid search retrieval.

2020 - 2021, Director, EDW Modernization, Hewlett Packard Enterprise (HPE)

Rescued a \$16M failed EDW-to-cloud migration, using ANTLR-based automation to shift 3PB+ data to Spark Delta Lake for under \$500K.

2020 - 2020, Partner Consultant (via SpringML), Google Cloud

Delivered ML pipelines and benchmarked Colab vs Databricks for GCP; implemented scalable data engineering using DataFlow and Kubernetes-based stacks.



2017 - 2020, Director of Data Science, American Express Global Business Travel (GBT)

Launched AmexAI@2020 Program: built trip recommender services, Traveler DNA, Gilbert bots, crisis response dashboards, and revenue optimization engines across global travel supply-chain.

2013 - 2017, Senior Manager, Big Data Programs, Intel Corporation

Built the Integrated Analytics Hub; migrated manufacturing data platforms from Exadata to Kafka/HBase; deployed in-situ yield and defect analytics.

2012 – 2013, Chief Data Scientist, Manta Media

Led analytics for fraud detection, SEO optimization, and listing deduplication; added \$5M in revenue through intelligent targeting of SMBs.

2004 - 2012, Senior Research Scientist, LexisNexis R&D

Built scalable search infrastructure (HPCC), real-time alerting, and semantic deduplication systems. Co-led Watson legal ontology collaboration.

1999 – 2002, Software Engineer & Research Associate, Intel Corporation

Contributed to SOAP/UDDI/.NET standards, designed x64 enterprise middleware benchmarks, and delivered StrongARM mobile platform reference designs.

Education

2004 | Ph.D. Candidate, Computer Science – Wright State University, Dayton, OH

Research included scalable information clustering via locality-preserving hashing, semantic classification at web scale, space-filling heuristics for high-dimensional optimization, and user-personalized topic modeling.

1999 | M.S., Human Factors and Systems Engineering – Wright State University, Dayton, OH

Focused on human-computer interaction in complex systems, Java-based discrete event simulations for USAF logistics optimization, and C2 (command and control) strategy modeling for UAV search and rescue domains.

1997 | B.Tech., Mechanical Engineering – JNTU Kakinada, India

University Valedictorian, Graduated with top honors.

Accomplishments

- University Valedictorian in Bachelors
- DAGSI Scholar
- Led 25+ enterprise data, analytics platform builds.



- Built and launched 3 venture-backed AI product companies.
- 12 international patents

Technical Skills Snapshot

Data Engineering & Warehousing

- Enterprise Data Lakes: Spark, Delta Lake, Snowflake, BigQuery, Synapse, Exadata
- ETL Modernization: ANTLR-based translation of Neoview SQL, Informatica, PL/SQL to Spark
- Structured & Semi-Structured Processing: HBase, Kafka, Avro, Parquet, ORC, JSON, XML
- Tools & Pipelines: Data Fusion, DataFlow, PySpark, Kafka Streams

Cloud Platforms & DevOps

- Cloud Expertise: Azure, AWS, GCP (multi-cloud architecture, VPCs, FedRAMP readiness)
- DevOps & IaC: Kubernetes, Terraform, ArgoCD, Docker, Istio, GitOps, CI/CD pipelines
- Hybrid Cloud Migration: Delta Lakehouse modernization, real-time observability, rollback SOPs

Machine Learning & AI

- ML/DL Modeling: Recommenders (GBT), Search Quantization (Bing), LTV, Anomaly Detection
- Generative AI & NLP: RAG pipelines, embeddings, semantic fieldmaps, GPT copilots
- MLOps Tooling: MLflow, Vertex AI, SageMaker, Kubeflow, model drift & retraining

Business Intelligence & Analytics

- BI Platforms: Tableau, Power BI, Looker, Custom web dashboards
- Decision Intelligence: Executive-ready analytics QA, what-if scenarios, metric storytelling
- Cataloging & Metadata: Semantic annotation, lineage tracking, data governance agents

Search & Indexing Systems

- Large-Scale Search: Bing Index, Lexis HPCC, ElasticSearch, Semantic Inference Engines
- AI Search Enrichment: UIMA, OWL, knowledge graph enhancement, deduplication logic
- Retrieval Techniques: Vector quantization, hybrid index (semantic + inverted), result distillation

Mobile, Web, Omnichannel Interfaces

- Frameworks: Flutter, WebAssembly, Android
- Interfaces: Booking chatbots, multilingual agents, responsive analytics dashboards



- Accessibility & UX: Section 508 compliance, voice search, cross-device UI experiences

Security, Governance & Compliance

- Access & Anomaly Detection: Exfiltration tracking, fine-grained access control
- Regulatory Compliance: FedRAMP, HIPAA, GDPR, ITAR
- Data Loss Prevention: Lineage, policy enforcement, secure semantic systems

Programming Languages & Tools

- Languages: Python, PySpark, Scala, Java, SQL, C#, R
- Frameworks & Libraries: TensorFlow, PyTorch, Scikit-learn, XGBoost, Flink, Node.js, D3.js
- Storage & Processing: HDFS, Hive, HBase, Kafka, MongoDB, Redis, ElasticSearch, Delta Lake

Product Innovation & Leadership

- gnyan.ai – Secure enterprise promptware orchestration
- data-bloom.com – Real-time ML & analytics consultancy for Fortune 100s
- fedworks.ai – Federal SBA-certified AI, apps, cloud, and RPA delivery
- Enya Media Works – Generative AI for media upscaling, dubbing, and synthesis

Data, AI, Analytics, Apps, & Cloud Professional

I'm Seshu Edala. I lead AI, analytics, and cloud transformation initiatives that scale. My work spans data-driven product innovation, enterprise applications, machine learning, and next-gen artificial intelligence.

[Email Me ➤](#)[View CV ↴](#)[ResumeGPT 💬](#)[Local RAG Bot 💬](#)



About Me

I am Narasimha "Seshu" Edala, a technology leader with over 25 years of experience driving innovation across [AI](#), [data](#), [analytics](#), [cloud](#), and [enterprise applications](#). I've led transformative initiatives at [Microsoft](#), [Google](#), [Intel](#), [Raytheon](#), [HPE](#), and served in executive roles within the [U.S. federal sector](#). My portfolio includes scaling data platforms, engineering real-time AI systems, and launching state-of-the-art, enterprise-grade solutions across mission-critical domains.

I specialize in turning complexity into clarity: delivering real-world, data-driven outcomes by merging deep technical insight with a hands-on, product-first mindset. With over [a dozen granted patents](#)

in AI and information systems, my work bridges R&D innovation and business impact.

As the founder of [multiple AI ventures](#) and a trusted advisor to both public and private sectors, I thrive at the intersection of strategy, architecture, and applied machine intelligence. I'm always open to transformative collaborations that push boundaries and deliver measurable value.



Commerce

Homeland Security

Microsoft

Google

Intel

HPE

Raytheon

LexisNexis

American Express

Enterprising AI Ventures



gnyan.ai

Secure vibe-coding platform for enterprises. From feature to release in hours, not sprints...



fedworks.ai

Secure data, digital, accessible information and AI solutions for the federal clientele.



data-bloom.com

Machine Learning and Data Science Solutions for the Fortune 100 Inc.



enya media works

Recoloring, Restoring and Curating old videos, photos, and audio footage with AI.



Career Experience



Associate Director, NTIS

U.S. Department of Commerce

Leading NTIS's transformation into a federal AI and data consultancy. Architected AI/RPA/Cloud blueprints, federal GenAI initiatives, and strategic innovation partnerships with industry, academia.

2024 – Present



Principal AI Engineer

Hertz Corporation

Architected MDM pipelines resolving 5x CRM duplications. Developed semantic cataloging, enterprise governance tools, and natural language BI analytics hub.

2023 – 2024



Principal Program Manager, WebXT

Microsoft Bing

Scaled Bing's index to over 1 trillion pages. Led semantic search R&D, embedding quantization, and hybrid retrieval architecture.

2021 – 2022



Partner Researcher

Google Cloud



Implemented scalable ML pipelines and infrastructure on GCP for fortune 50 clients. Benchmarked Colab vs Databricks on AWS, Azure, and Databricks for GCP Vertex AI GTM planning; deployed Kubernetes-native data workflows.

2020 - 2020



Senior Manager, Big Data Programs

Intel Corporation

Built the Intel Analytics Hub Datalake. Migrated manufacturing operational stores to Kafka/HBase/Spark Platform. Built pushed-down in-situ analytics for yield analysis ops.

2013 – 2017





Consulting Research Scientist

LexisNexis R&D

Engineered scalable legal search infrastructure and semantic deduplication systems. Co-led collaboration with Watson legal ontologies.

2004 – 2012



Technical Expertise

Data Engineering

Spark, Databricks, Snowflake, BigQuery, Synapse, Exadata, SQL Server
Hadoop, Kafka, Iceberg, Presto, Alteryx, Streamsets, Airflow, HPCC, Flink
Data Fusion, DataFlow, PySpark, Kafka Streams

Cloud Platforms & DevOps

Azure, AWS, GCP (multi-cloud, VPCs, FedRAMP readiness)
Kubernetes, Terraform, Podman, Docker, Istio, GitOps
Delta Lakehouse Modernization, Observability, SOPs

Machine Learning & AI

Recommenders, Search Quantization, RPA
Bots, Anomaly Detection
RAG pipelines, Embeddings, GPT Transformers, Computer Vision, NLP, Graph Analytics
MLflow, Vertex AI, SageMaker, Kubeflow, Model Drift & Continuous Release

BI & Analytics

Tableau, Power BI, Looker, Custom dashboards
Natural Language BI, What-If Engines
Unsupervised Learning, Clustering, Classification, Regression, Deep Learning, Transformers, Diffusers

Search & Indexing

Security & Compliance

Bing Index, Lexis HPCC, Lucene, ElasticSearch
UIMA, OWL, Knowledge Graphs, Semantic Deduplication
Topic Modeling, Embedding Quantization, Hybrid Retrieval

Exfiltration tracking, fine-grained access control, Data Leak Prevention, Data Governance, Data Tagging
FedRAMP, HIPAA, GDPR, ITAR compliance
Zero Trust, Encryption, Tokenization, Data Masking

Languages & Libraries

Python, PySpark, Scala, Java, SQL, C#, R, Jupyter
TensorFlow, PyTorch, Scikit-learn, XGBoost
NumPy, Pandas, Matplotlib, Seaborn, Plotly

Product Innovation

Rapid Prototyping, MVP Launches, AI Venture Creation
gnyan.ai, fedworks.ai, data-bloom.com, enya media works
Innovation at scale in enterprise, startup, and federal domains

Apps & Accessibility

Flutter, WebAssembly, Android, React, Next.js
Booking Chatbots, Voice Assistants, AI Copilots
Sections 508, 504 Compliance, Responsive Design

Contact Me

I am **#Open To Work**. I am a **US citizen with the Top Security Clearance** having worked for the federal government (grade 15) until recent DOGE actions against the probationary employees in Feb 2025. I am open to relocating from **Austin, TX** for the "right" opportunity (aka right leader with a purposeful inclusive growth mindset). Link to my **#Resume**. Email me at **nedala@gmail.com** to **discuss a career opportunity**.

Instead, if you wish to discuss or collaborate on an enterprising idea, please feel free to reach out too.

Name: Mr. Narasimha "Seshu" EDALA, Address: 2117 Buffalo Gap, Leander TX 78641,
Email: nedala@gmail.com, Telephone Number: 1-614-467-0423, Resume Link:
<http://gnyanai.ddns.net:4041/nedala.pdf>

Seshu's education: bachelors BS degree in Mechanical Engineering between 1993 and 1997 at JNTU Kakinada in India

Between 1993 and 1997 (aka 1993, 1994, 1995, 1996, and 1997), Seshu pursued his Bachelors in Mechanical Engineering at Jawaharlal Nehru Technological University (JNTU), Kakinada, Andhra Pradesh in India. Between 1993 and 1997. University Valedictorian (an academic honors).

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Seshu's education: masters MS degree in Systems Engineering & Human Factors Engineering at Wright State University between 1997 and 1999.

Between 1997 and 1999 – aka 1997, 1998, 1999 – Seshu pursued Masters in Human Factors and Systems Engineering at Wright State University, Dayton OH. US. Arrived in US on F1 visa in Sep 1997 and graduated with 3.7 GPA in Jul 1999. Graduate Research Assistant under Dr. Narayanan (then head of the department of human factors and biomedical engineering). Studied concept of humans in complex systems, user interface designs. Built Java based discrete event simulations and modeling infrastructure to optimize materiel planning for USAF sortie and logistics operations. Also investigated complex decision making and optimal outcomes (search & rescue mission effectiveness of rescues, error rates, sweep areas, rescue recoveries) in complex unmanned aerial vehicle swarm command and control fieldcases. Mastered Java AWT, Applet, UI, Swift technologies for developing write-once-run-anywhere applications/applets. Subsequently went from graduate masters program into Intel's Enterprise Services Group investigating emerging distributed computing standards and implementations of the pre-Y2K, .com emergence. Also studied logical entailment and deductive reasoning techniques: developed Prolog and Lisp proficiency.

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Seshu's first entry into commercial job at Intel Corporation (INTC) in 1999.

In July 1999, Seshu joined Intel Corporation as a fresh recent college graduate. He grew from recent college graduate to senior software engineer at Intel's enterprise services group between 1999 and 2001 (aka 1999, 2000, 2001). While there, he investigated enterprise middleware stacks like databases, transactional semantics, message queues, remote procedure protocols, directory and discovery standards, infiniband architectures, network interconnect benchmarks, security, access control, active directory protocols. He also studied emerging W3C and ECMA computing standards of universal plug and play, UDDI, SOAP, XML interchange standards; he participated in the ECMA, W3C standard member representation bodies (on behalf of Intel) to define, benchmark, develop, validate, and drafting continuous evolution of these foundational internet & ecommerce standards. He was largely involved with WSDL and UDDI specification standards; he was also contributing to the first .NET CLR (common language runtime) and C# language spec in close collaboration with Microsoft.

In 2001, Seshu switched to Intel Corp's servers group where he recompiled x86 32 bit applications, drivers, and modules for emerging 64bit x64 architecture. Later, at Intel's wireless client and computing group (WCCG), he defined the new StrongARM mobile processor architecture technical specs, reference board designs, battery and power management ips. He held the technical project manager role for SymbianOS and OS/App stack roadmap for StrongARM product line.

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Seshu returns to Wright State University in 2002 to pursue PhD coursework alongside his wife. He pursues that through 2004 (aka 2002, 2003, 2004). After marrying Lavanya in Sep 2001, Seshu and Lavanya moved to Wright State University's Russ Engineering Center to pursue their PhD and masters under Dr. Narayanan in computer science and systems engineering respectively -- both maintained a consistent 4.0 GPA through their academic coursework. For PhD dissertation: where traditional clustering methods were computationally expensive in $O(N^2)$ -- especially at web search scale -- which disallowed machines to organize and render semantic labels on large datasets, Seshu in his doctoral thesis investigated egocentric heuristic measures (like space filling curves and locality preserving hashing techniques) to cluster large topical spaces in near realtime -- even if that meant reduced accuracy of statistical algorithms. These locality preserving egocentric measures are analogous to positing a class of students by their height using an external height-measure versus permutational comparison between all student pairs. Over the course of his research, Seshu published extensively in the space of information search and retrieval, vector quantization methods, personalization, locality sensitive hashing etc at leading SIGCHI and SIGKDD conferences.

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Seshu abandons his PhD dissertation at Wright State University in 2004 (due to personal circumstances) under Dr. Narayanan's guidance. He consistently excelled at his coursework and candidacy with a 4.0 GPA. Seshu left his doctoral studies in ABD status and switched into a senior research scientist role at LexisNexis's New technology research group. LexisNexis is world's leading knowledge research platform for legal, business, and finance professionals that pioneered binary search and natural language search in 1969. Lavanya joined LexisNexis at a similar time too as a research associate.

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Seshu's experience at LexisNexis between 2004 and 2008 (aka 2004, 005, 2006, 2007, 2008):

LexisNexis is an online leading legal research platform: destinant to many legal, business, and finance professionals. LexisNexis invented binary search: it builds information collections at petabyte scale for nea realtime information on mainframes for legal professionals that foundationally rely on uptodate, accurate caselaw and statutory research. At new technology research labs, Seshu pioneered deep personalization techniques, recommendation systems for upselling subscriptions. He also experimented heavily with hypergraph pagerank measures of centrality for relevance. He also built information push subscriptions and real-time syndication of information alerts. He also addressed the key challenge of scalable information deduplication for news federation services (like LexisNexis, Factiva). He also worked closely with IBM Watson research services group in defining and implementing UIMA, OWL to define news, legal, and financial reporting ontologies. Seshu also built high-speed data integration and indexing pipelines for TotalSearch eDiscovery PaaS product. Through the 4 years, he grew into a consulting research scientist. Two of his seminal contributions in 2007 and 2008 are LexisNexis in-browser toolbar/extensions for in-context user-research as well as infrastructure provisioning/migration from IBM Mainframe to Hadoop.

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Seshu continued his growth at LexisNexis between 2008 to 2012 (aka 2008, 2009, 2010, 2011, 2012) turning into core relevance research and search systems on HPCC.

Seshu continued his progress at LexisNexis, after LexisNexis acquired Seisint in 2008 -- a people/risk intelligence company that had invented enterprise control language (ECL), a declarative language that compiles into distributed Lintel MPP routines – its analogous to Hadoop's massively scale-out processing architecture but predated Hadoop's MapReduce paradigm -- Seshu was the engineering lead in developing information/content extraction/migration strategy to high-performance computing cluster (HPCC). Seshu also wrote the foundation indexing, search, ranking, policy-filtering routines and oversaw first concept of operations of search on HPCC (at \$0.02/search) versus (\$0.23/search on IBM mainframe) -- a total savings of \$80M in 2009. A similar ConOps of XML shredding engine that allowed rolling-up micro-mutable multiversioned concurrency controlled segments saved another \$50M for LexisNexis. Besides, Seshu drove the IBM engagement for Watson-Lexis collaboration: first AI infused legal research platform that used distributed knowledgegraphs for QA. Seshu also was instrumental in building patent search (emerging patent/IP trends -- BI analytics research/notifications platform for corporate IP lawyers).

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Seshu joins Manta Media as chief data scientist between 2012 and 2013.

In 2013, Seshu and Lavanya relocated to Columbus OH (for Lavanya's LimitedBrands job). Seshu assumed the role of chief data scientist (a role that was still coagulating in the industry) at Manta Media, a small and medium business listings company that helped SMBs with freemium social, web, and mobile audience. It was critical for Manta Media to protect licensed D&B content from exfiltration and robotic traffic of abuse. It was also critical to captivate web audience and optimize PPC and PPV revenues by optimizing SEO rankings for SMB non-technical audience. It was equally important to upsell co-branded partnerships (for example chartered accountants with tax professionals) using great recommendation engines. Seshu built and operationalized fraud prevention, exfiltration protection, recommendation services, listing deduplications, keyword bidding optimization, SEO keyword injection, log monitoring services at a scale of 30M/day traffic. Added \$5M data science revenue in 2013 to the \$11M revenue in 2012 within one year.

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Seshu returns to Intel in 2013 as a big data architect and continues there through 2017 (aka 2013, 2014, 2015, 2016, and 2017). Between 2013 and 2017, Seshu returned to Intel -- first as a Big Data Architect at Intel IT -- spearheading the buildout of Intel's integrated analytics hub (IAH) -- a singular data lake for enterprise -- finance, operations, supply chain, sales, marketing, human resources (FOSHS), information security & analytics: a huge undertaking that integrated over 100 sources of heterogenous use, speed, structure, utility to overcome data quality, costs, duplicity, and pan-datamart challenges. IAH panned a savings of \$600M over 5-year period.

Also spearheaded big data program management office to steer the analytics 3.0 transformation across Intel's analytics divisions. Seshu remained hands-on implementation and thought leader during the IAH implementing exfiltration spotting engine, hardware MTBF predictive observability engine, social media monitoring toolkits etc.

The IAH transformation garnered substantive attention from Intel's technology and manufacturing group -- when in 2015, Seshu was promoted as a senior manager with the Intel's logic technology development group -- to lead manufacturing analytics hub (MAH) implementation from older TIBCO and Exadata warehouse to Kafka, Spark Datalake house for low-volume manufacturing (LVM) first and HVM after.

Storing long die pedigree data (a timeseries ordinal database of material-process-timing-state events) in Exadata, a relational warehouse to create tall lean tables was regressive before Seshu pivoted the implementation to pedigree-native HBase (with JDBC query layer) to allow both table-level aggregate analytics and row-level analytics across geo-distributed factory floors. During this transformation while leading the big data change control management, Seshu also worked on --

- 1) building in-situ pushdown server-side yield analytics that runs defect provenance for sort and die defects directly atop the LTD cluster than client-side surgical analytics,
- 2) Built factory improvement tracking for automotive products (along with corporate quality network) to allow for 8D continuous detection & improvement; implemented SCADA interfaces for material routing, probing, end-of-line screening, and RMA analytics,
- 3) implemented numerous stochastic process control (SPC) methods to sort, screen, bin, and route material along optimized monte-carlo paths, and
- 4) spearheaded Mfg DevOps -- a stage-gated model build, certification, release/rollback change-control standard operating procedures (SOPs) to minimize wafer-in-progress (WIP) material losses.

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Experience: Seshu joins American Express Global Business Travel – a corporate travel service provider – a partnership between Amex and Certares capital: he continues there through 2020 (aka 2017, 2018, 2019, and 2020). Seshu joined Amex Global Business Travel (GBT) -- a business travel services company -- as the director of Data Science -- a non-existent business function at the new partnership. Seshu was instrumental in designing and delivering AI@GBT mission 2020 -- a comprehensive infusion of data science and AI driven customer acquisition, service delivery, engagement process, and inventory optimization. For example: --

- 1) Trip Recommendation System (TRS) -- trip-as-a-service upselling, cross-selling "attachment-promoting" recommender that combines policy, content, collaborative, context, delivery techniques. TRS started generating \$4M+ revenue from year 1 -- with a progressive uptake improving from 4% click-rates on email channels -- to turning into a mobile upselling and online-booking (OBT) platform service in 2020.
- 2) Built traveler DNA -- a comprehensive personalized analytics platform that mined tacit behavioral patterns of the users (travel propensity spatio-temporal-loyalty preferences of travelers which weekday/time/brand/air/hotel/rental/terminal/destination/payment methods etc) to reduce courtship time on the telephonic channels; later extended as an omnichannel analytics service to maximize travel counselor utilization and improve NPS score of the customer.
- 3) building a customer LTV pipeline -- a lead generation, sales, customer retention, account-delegation funnel -- to identify and keep new business prospects: retention rates from the second year consistently hovered >90%; the acquisition rates hovered around 30%.
- 4) built digital front (digital home skills with STT), mid, backoffice automation assistants to manage the RPA and service delivery using RASA toolkits.
- 5) Created "traveler dash" (email, browser, chat plugins) -- similar to Amazon dash -- to allow ez-bookings for travelers.
- 6) Developed pre-travel (client policy compliance), in-travel (service excellence), post-travel (expense reclaims, NPS scores) triaging/MDM solutions to reconcile planning, execution, wastage metrics under premier insights (BI) for client travel officers.
- 7) delivered workforce planning and scheduling charts for supervisory oversight of multilingual, globally distributed telephony, email, online flex/client-dedicated travel counselors -- the planning tool used both traditional forecasting methods as well as weather/incident/emergency outlier events (from travel, weather, news advisories).
- 8) implemented industry and peer-benchmarking insights for fortune 50 travel planning and travel policy shaping via premier insights,
- 9) implemented mobile/responsive functions in flutter (as part of the larger AmexGBT app) for essential travel services (like push notifications/reminders, expense snapping, social commentary/sentiment analysis).
- 10) Built business observability monitors ("HawkEye") for prescient insights to key performance indicators like bookings, cancellations, volume, loyalty shifts as early distress signals for corrective actioning. For example, the COVID booking trends that started in Feb (which put Seshu's AI group on furlough due to travel bans) in Feb showed distressed signals as early as the first week of December 2019.

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Seshu joins HPE in 2020 after losing his role at GBT due to COVID virus. Seshu's career at AmexGBT enters "furloughed" state due to global travel shutdown. Furloughed in early 2020 from GBT, Seshu joined HPE as the director of enterprise data warehouse (EDW) modernization. Faced with dying hardware of Seaquest EDW appliances that had reached EOL status a decade before 2021, the 3-way EDW ring implementation was costly, inaccurate, and lagging in SLA/OLAs; the original plan of \$16M plan (\$8M was specifically for code & data migration) to migrate to cloud was designed to rewrite -- but never attempted between 2018-21 by the contractor workforce -- facing hard deadlines of DXC cutting off access in 2021, Seshu pivoted from the "rewrite" pattern to a demand/profiling-based "lift-n-shift" design pattern. He not only proposed the pivot but quickly wrote ANTLR lexers/parsers to unknot 115K ETL scripts (over 3 millions lines of Neoview SQL code), 3PB data tiers, 40K adhoc + structured reports/day to translate the DW implementation to Spark Delta Lake in under 4 months at approximately \$500K budget. <https://nedala.github.io/deltalakehouse/> is a blog documenting the path.

In addition to being a heads-down hands-on cloud modernization architect, Seshu managed a global pool of 50 engineering and program professionals across four countries in India, Mexico, US, and Germany. The automation toolkits (scanners, lexers, parsers, translators, composers, access migrations etc) of cloud migration allowed for transitional run of EDW to cloud in a hybrid-parallel mode first and in global VPC exclusive mode second.

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In 2020, Seshu also worked as a Google Cloud Consultant for Google Cloud (via SpringML, Google's Gold partner). Seshu helped notable fortune clients (references provided on request) to move their data pipelines to the cloud using DataFlow + DataFusion, enable in-situ analytics atop BigQuery, process large datasets on GCS using DataProc, containerize services using mesh technologies like k8s + Istio, implement AutoML & MLOps SaaS training + inferencing using CloudRun, TFRun (Tensorflow, Kubeflow) etc.

Seshu also played deep technical competitive intelligence consultant role for Google (on Google's request) to benchmark Google Colab, Google Notebooks and Databricks Notebooks for GCP's market research -- to allow feature planning, pricing and release go-to-market (GTM) planning.

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Experience 2021: While GAMA (Google, Apple, Microsoft, Amazon) remains an elusive dream for techies, Seshu proudly joined Microsoft Bing as the Principal Program Manager for Bing's build-n-serve indexing platform. At Microsoft, Seshu delivered two critical projects –

- 1) meticulous planning and execution of scaling up index size from 400B pages to 1 trillion pages under the able leadership of Mikhail Parakhin (then Bing CEO). The scope ranged from the page acquisition, page segmentation, semantic embeddings and content understanding, content sharding and inverted indexing, results T1, T2, T3 distillation, ranking, to the presentation: both function + performance.
- 2) Conduct research for pivoting from Term Inverted Index (fast but incomplete) or Document Indexes (complete but wait until critical quorum responds) to a semantic quantization fieldmap indexing as the most effective hybrid method that fits the best performance and relevancy imperatives of CX.

Seshu quit Microsoft unable to meet the RTO mandate in Seattle while living in Austin TX.

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Seshu joined Raytheon Technologies (RTX) in 2022 (aka 2022, 2023). Between 2022 and 2023, Seshu worked for Raytheon Intelligence and Space: building .gov secure cloud infrastructure and migration strategy -- an end-to-end data analytics strategic vision + implementation - from ingress to intelligence services. Seshu worked on both strategic design, migration planning as well as data/script migrations from SQL datamarts and PowerBI charts to cloud-native Azure services.

Seshu also worked on material resource planning (MRP)'s critical lead-time analysis (via both parametric analysis and non-parametric methods) to optimize inventory procurement, supplier selection, client delivery planning, assembly cycle times etc. These programs -- unlike normal HVM manufacturing -- rely on specialist parts and specialist personnel that cannot be redundantly shelved or pre-emptively scheduled: DoD imposes fines for program delays that cannot be simply passed to the supply chain. Seshu developed numerous data integration and cycle time calculators for multiple Raytheon programs. He also developed Plan-for-every-part (PFEP) simulations (both discrete event simulations as well personnel digital twins) to model complex nearline adaptive plans for McKinney TX based Raytheon factories to minimize wastage, maximize utilization, shorten quality latencies, and optimal MTBF predictions. Some of these programs/products exceeded \$B in value.

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Seshu -- wishing to enter into federal service -- joined Mantech's Department of Homeland Security (DHS) USCBP (Customs and Border Patrol) TASPD (targeting analytics program directorate) in 2023 as a principal AI consultant delivering on --

- 1) FinCEN financial intelligence/crime linkgraph syndicate nexus models digging up latent tacit associations
- 2) SONAR (synthetic narcotic screening) models for preemptive cargo/shipment/passenger screening,
- 3) vehicular smuggling & human trafficking flagging models,
- 4) improved harmonized tariff schedule cargo coding for better tariff segmentation,
- 5) created open source based local ChatGPT clone implementation free of leakage issues for border officer terminals, and
- 6) built AI analytics hub -- a suite of agentic and generative AI services like language translation assistant, search augmentation assistant, data cataloging assistant, powerpoint research assistant, OCR assistant, coding assistant, harmonized tariff schedule (HTS) tariff coding assistant, MLOps assistant, code translation assistant, entity graph knowledgebase query assistant etc.

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In Jun 2024, Seshu joined the national technical information service (NTIS), a non-appropriated department of commerce agency, that thus far was a federal STEM information clearing house for American knowledge workers was pivoting to becoming a fee-based not-for-profit fed2fed data and digital consultancy which created superior outcomes for other federal agencies' data, digital, cloud, and AI needs. After all, DoC was the .com office for gov and NTIS is the .ai office for DoC.

Seshu is the associate director (reporting to the CEO of the agency) to define, develop, and deliver on this pivotal transformation of the agency. Among its \$MM projects in the first 9 months, Seshu developed AI, Data, Digitization, Accessibility, RPA, IT, Cloud (functional and risk profiles), recommended strategic investments, recruited joint venture partners (private/academic partners to co-create information solutions for the federal clientele) ecosystem, and "created" (built and demonstrated) many of transformative products for the agency before the presidential transition. Seshu was leading the office of data services (ODS) as the associate director at NTIS, Seshu was the resident data management, machine learning, data science, artificial intelligence (Generative AI, agentic AI, sensory/perceptive AI), process automation (RPA workflows), digitization (OCR and segmentation), information search (semantic search for NTRL), information copilot services (for organizational maturity), FFRDC liaison (for sponsoring customer, market, technology research), CIO consultant for SecDevOps.

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Personal Details for Seshu

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Email: nedala@gmail.com

Telephone Number: 1-614-467-0423

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Summary

Seshu Edala is an enterprise technology leader with over 25 years of multidisciplinary experience, including leadership roles and technical delivery at global technology powerhouses such as **Intel Corporation**, **Hewlett Packard Enterprise (HPE)**, **Microsoft**, and **Google Cloud**. Across these roles, he has driven high-impact innovations in data engineering, large-scale AI systems, cloud modernization, mobile development, enterprise analytics, RPA automation, semantic search, and accessibility platforms.

He is a deeply hands-on practitioner and a founding technologist behind four advanced AI ventures:

- **Gnyan.ai** – Enterprise promptware orchestration for secure, grounded LLM workflows.
- **Data-Bloom.com** – Near real-time analytics and ML engineering for Fortune 100 enterprises.
- **FedWorks.ai** – SBA-certified federal partner for AI, accessibility, RPA, cloud, and analytics.
- **Enya Media Works** – Generative AI studio focused on legacy media upscaling, multilingual dubbing, and synthetic voice/character injection.

Seshu's journey spans from building analytical data lakes at **Intel**, cloud lakehouse transformations at **HPE**, semantic indexing at **Microsoft Bing**, and cloud-native ML solutions with **Google Cloud**. His federal AI leadership at **NTIS and DHS** reflects his public sector impact, while his ventures address market gaps in AI operationalization.

He bridges strategic vision and technical depth to deliver measurable results—whether reducing EDW modernization costs from \$16M to \$500K, scaling Bing's index to 1 trillion pages, or building sovereign AI copilots for national security workflows. His work spans foundational R&D to full-scale implementation across data science, big data architecture, accessible design, RPA-driven processes, and search intelligence.

He also holds granted patents in AI-driven analytics and indexing architectures, further underscoring his deep contributions to the field.

Seshu's capabilities include architecting secure, AI-driven solutions for the federal ecosystem (NTIS, DHS, Raytheon), building scalable cloud data platforms (HPE, Intel, Manta), leading high-volume search/indexing systems (Microsoft Bing, LexisNexis), and implementing recommendation engines and analytics hubs (Amex GBT, Hertz). He has also created multiple AI ventures including Gnyan.ai, Data-Bloom.com, FedWorks.ai, and Enya Media Works.

He excels at bridging business imperatives with data and digital execution: from promptware copilots to policy-compliant RAG systems; from lakehouse migrations to multilingual media upscaling. His work routinely delivers multi-million dollar impact through optimized processes, replatforming efficiency, and machine-augmented decision support.

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Experience: Associate Director – Office of Data Services at NTIS

Organization: National Technical Information Service (NTIS), U.S. Department of Commerce

Location: Austin, TX / Remote

Time Period: Jun 2024 – Present

Seshu Edala serves as the Associate Director of the Office of Data Services at NTIS, a pivotal agency within the Department of Commerce transitioning from an information clearinghouse to a fee-based, federal-to-federal digital and AI consultancy. Reporting directly to the CEO, he leads the AI, Data, Digitization, Accessibility, RPA, IT, and Cloud vision and transformation of NTIS.

- Formulated the strategic AI and data transformation blueprint aligning with NTIS's ".ai office for DoC" mission
- Spearheaded several multi-million dollar digital and AI product builds ahead of the 2024 presidential transition
- Directed joint venture partner ecosystem for co-creating federal AI solutions
- Created a suite of AI copilot tools including:
 - Translation Assistant
 - Search Assistant
 - Data Cataloging Assistant
 - PowerPoint Research Assistant
 - OCR & Document Digitization Tools
 - Generative AI & Agentic Workflows for federal services
- Established FFRDC liaisons, CIO-level SecDevOps consulting, and strategic risk profiles for data innovation

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Experience: Principal Data Scientist at ManTech Inc.

Organization: Mantech International – DHS USCBP TASPD (Targeting Analytics Program Directorate)

Location: Austin, TX

Time Period: 2023 – 2024

Seshu drove the development of high-impact analytics and AI models supporting national security and trade enforcement at the Department of Homeland Security.

- Built advanced link graph analytics for FinCEN financial crime detection
- Developed SONAR models for synthetic narcotic cargo screening
- Led R&D on preemptive vehicular smuggling and trafficking prediction models
- Created tariff classification and segmentation ML systems
- Deployed a secure, air-gapped GPT implementation for border agents
- Delivered an "AI Analytics Hub" of operational copilot agents across translation, OCR, entity-graph mining, code conversion, data annotation, and MLOps guidance

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Experience: AI/Cloud/Analytics Strategist at Raytheon Inc

Organization: Raytheon Intelligence & Space

Location: McKinney, TX / Austin, TX

Time Period: 2022 – 2023

Led the data modernization and analytics strategy for .gov cloud solutions, focusing on defense logistics and manufacturing intelligence.

- Migrated SQL/PowerBI ecosystems to Azure-native analytics workflows
- Designed cycle-time models and MRP optimization analytics
- Built PFEP (Plan for Every Part) simulations incorporating discrete-event and digital twin modeling
- Delivered high-fidelity MTBF predictions, inventory, and quality analytics for multi-billion-dollar DoD programs

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Experience: Principal Program Manager – Indexing at Microsoft WebXT team.

Organization: Microsoft Bing

Location: Austin, TX

Time Period: 2021 – 2022

Under the leadership of Mikhail Parakhin, Seshu led strategic indexing scale-up and search architecture redesign.

- Orchestrated growth of the index corpus from 400B to 1 trillion pages
- Developed semantic embedding and fieldmap quantization indexing architecture
- Conducted tradeoff research on Term Inverted vs Document vs Semantic Index hybrids
- Delivered measurable improvements in content acquisition, segmentation, relevance scoring, and presentation layers

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Experience: Director of EDW Modernization at HPE

Organization: Hewlett Packard Enterprise (HPE)

Location: Austin, TX

Time Period: 2020 – 2021

Seshu rescued a failed \$16M migration effort from a legacy Seaquest EDW to Spark Delta Lakehouse in under 4 months.

- Authored ANTLR-based lexical analyzers to deconstruct 115K legacy ETL scripts
- Migrated 3PB of data and 40K reports/day at \$500K cost
- Established hybrid transition mode, then VPC-only architecture
- Documented the journey at <https://nedala.github.io/deltalakehouse/>
- Led a 50-member international team across 4 countries

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Experience: Director of Data Science – AI@Amex GBT Mission 2020

Organization: American Express Global Business Travel (GBT)

Location: Austin, TX

Time Period: 2017 – 2020

Seshu was hired to build GBT's AI function from scratch, transforming the enterprise with data science innovation.

- Architected "Trip Recommendation System" – \$4M+ ARR in first year
- Designed "Traveler DNA" omnichannel personalization suite
- Developed customer LTV pipelines improving >90% retention rates
- Delivered digital front-, mid-, back-office automation using RASA
- Created the "Traveler Dash" and crisis alert/benchmarking platforms
- Built "HawkEye" – a KPI observability system predicting booking downturns pre-COVID

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Experience: Senior Manager, Manufacturing Data at Intel Corp

Organization: Intel Corporation – Logic Technology Development (LTD)

Location: Folsom, CA

Time Period: 2015 – 2017

Led transformation of factory analytics and SCADA telemetry systems from TIBCO-Exadata to Kafka-Spark-HBase stack.

- Pivoted Exadata-based die pedigree to HBase with JDBC analytics layer
- Delivered SCADA interfacing and SPC analytics reducing WIP losses
- Developed in-situ yield analytics and 8D process improvement tools
- Spearheaded SOP for model build, rollout, rollback for Mfg DevOps

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Experience: Big Data Architect for Integrated Analytics Hub (IAH) at Intel IT

Organization: Intel IT

Location: Folsom, CA

Time Period: 2013 – 2015

Built Intel's first enterprise-wide data lake across finance, ops, sales, marketing, HR, and SOC teams.

- Integrated 100+ data sources under one analytics mesh
- Saved \$600M over 5 years in enterprise analytics consolidation
- Created social monitoring tools, hardware MTB predictors, data governance policies
- Founded Big Data PMO to steer analytics transformation

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Experience: Chief Data Scientist at Manta Media

Organization: Manta Media

Location: Columbus, OH

Time Period: 2012 – 2013

Led data science initiatives for SMB listing marketplace with D&B licensing.

- Built traffic fraud prevention and listing deduplication systems
- Developed SEO/keyword optimization and co-brand recommender engines
- Captured \$5M data science revenue in 12 months

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Experience: Consulting Research Scientist / Engineering Lead at LexisNexis (LxNx)

Organization: LexisNexis

Location: Dayton, OH

Time Period: 2004 – 2012

- Built personalized search, deduplication, and syndication systems
- Migrated TotalSearch eDiscovery pipelines to Hadoop
- Pioneered HPCC search stack post-Seisint acquisition
- Saved \$80M with MPP search and \$50M via XML shredding pipeline
- Co-designed Watson-Lexis IP search platform and patent trend analytics

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Education

B.Tech (Bachelors) in Mechanical Engineering

Institution: Jawaharlal Nehru Technological University, Kakinada, India

Years: 1993 – 1997

Distinction: University Valedictorian

GPA: 4.0

M.S. (Masters) in Human Factors & Systems Engineering

Institution: Wright State University, Dayton, OH

Years: 1997 – 1999

Distinction: GPA 3.7/4.0; Graduate Research Assistant; Specialized in UI design, decision systems, discrete-event simulations for USAF logistics; DAGSI eminent scholar.

Ph.D. Candidate (ABD) in Computer Science & Systems Engineering

Institution: Wright State University

Years: 2002 – 2004

Focus: Heuristic clustering, semantic labeling, locality-sensitive hashing, SIGCHI/SIGKDD publications

GPA: 4.0

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Gnyan.ai (Founder)

Mission: Enterprise promptware delivery for LLM-powered use cases

Description: Gnyan.ai is a secure, domain-specific AI copilot platform for enterprises and federal entities. It offers multi-agent orchestration, private RAG systems, access-controlled grounding, and custom skillsets tailored to verticals like legal, compliance, engineering, and citizen services. Used within NTIS, FedWorks.ai, and other strategic deployments.

Data-Bloom.com (Founder)

Mission: Real-time machine learning and analytics solutions for Fortune 100s

Description: Data-Bloom provides hands-on ML engineering, model productionization, and intelligent observability for retail, travel, and financial domains. It builds resilient pipelines, predictive engines, and streaming architectures with tangible ROI.

FedWorks.ai (Founder)

Mission: SBA-registered federal solutions firm delivering AI, accessibility, analytics, cloud, and RPA services

Description: A certified SBA entity that delivers AI modernization services to federal agencies. It supports FISMA, FedRAMP, Section 508, and Zero Trust compliance while delivering copilots, search agents, workflow automation, and ML systems for mission continuity and digital maturity.

Enya Media Works (Founder)

Mission: Generative AI platform for media restoration, dubbing, and personalization

Description: Enya builds AI pipelines that upscale, recolor, and voice-modulate vintage footage, enabling multilingual dubbing, character injection, and creative transformation for historical archives, media firms, and broadcasters.

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Entrepreneurship

Founder – Gnyan.ai

Mission: Enterprise promptware delivery for LLM-powered use cases

Founder – Data-Bloom.com

Mission: Real-time machine learning and analytics solutions for Fortune 100s

Founder – FedWorks.ai

Mission: SBA-registered federal solutions firm delivering AI, analytics, accessibility, cloud, RPA services to public sector

Founder – Enya Media Works

Mission: Generative AI platform for media recoloring, upscaling, restoration, voice/character injection, multilingual dubbing

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Technical Skills

Data Engineering & Warehousing

- Architected hybrid-to-cloud lakehouse solutions at HPE and Intel using Spark, Delta Lake, Kafka, HBase, and Synapse.
- Translated legacy ETL stacks (Neoview, SQL, PL/SQL, Informatica) into distributed Spark-native pipelines using ANTLR lexers and DSL parsers at HPE.
- Designed data governance, versioning, and ingestion standards at NTIS and Intel IT.

Machine Learning & AI

- Designed recommender systems (Amex GBT Trip Recommender), synthetic screening classifiers (DHS SONAR), and cycle optimization models (Raytheon MRP).
- Built RAG-based copilot agents at NTIS and DHS for translation, search, and MLOps guidance.
- Researched semantic vector quantization and hybrid index architectures for Bing's web index expansion.

Cloud & Infrastructure

- Delivered enterprise workloads across Azure (NTIS, Raytheon), GCP (SpringML), and AWS (LexisNexis).
- Led transition from Seaquest EDW to Spark Delta Lake on Kubernetes with VPC networking at HPE.
- Implemented secure and sovereign cloud-based RPA and AI workflows for federal clients at FedWorks.ai.

Business Intelligence & Observability

- Built analytics QA engines and executive what-if dashboards (Hertz BI Hub, GBT Premier Insights).
- Delivered observability dashboards and KPI intelligence monitors (GBT HawkEye, NTIS Analytics).
- Developed English-as-BA-language cataloging agents at Hertz to facilitate self-service data discovery.

Languages & Toolkits

- Programming: Python, Java, Scala, SQL, Prolog, Lisp, C#, JavaScript
- Data/ML: Spark, TensorFlow, Scikit-learn, PyTorch, XGBoost, MLflow
- Cloud/Infra: Kubernetes, Istio, CloudRun, Terraform, ArgoCD, Docker
- Platforms: BigQuery, Synapse, Snowflake, HDFS, Hive, HBase, MongoDB, Redis, Delta Lake

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Key Accomplishments

- Scaled Bing's search index from 400B to 1 trillion documents while introducing hybrid semantic indexing.
- Reduced HPE's data warehouse modernization cost from \$16M to \$500K by creating ANTLR-based code translation toolchains.
- Built AI@GBT product suite generating over \$4M ARR and >90% customer retention via LTV analytics.
- Created the Intel Integrated Analytics Hub (IAH), consolidating 100+ enterprise sources, saving \$600M.
- Delivered real-time fraud detection and SEO optimization at Manta Media, adding \$5M in annual revenue.
- Migrated LexisNexis legacy search infrastructure to HPCC, saving \$130M.
- Developed linkgraph analytics and sovereign GPT copilots for DHS FinCEN and border protection.
- Designed RPA and analytics copilots for NTIS across translation, search, data governance, and accessibility.
- Built DoD logistics PFEP simulations and MTBF predictors for Raytheon's billion-dollar programs.
- Led multiple startup ventures with real-world deployments across federal and commercial sectors.

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Career Experience

2024 - Present, Associate Director, NTIS, U.S. Department of Commerce

Leading the transformation of NTIS into a federal AI and data consultancy. Designed AI/RPA/Cloud blueprints, created federal GenAI copilots, and established strategic innovation partnerships.

2023 - 2024, Consulting AI Contractor, Mantech (DHS TASPD Program)

Delivered applied AI models for narcotics interdiction and financial crime networks. Deployed secure LLM copilots and a multilingual assistant suite for field agents.

2023 - 2024, Principal AI Engineer, Hertz Corporation

Architected MDM pipelines resolving 5x CRM duplications, built NLQ analytics, and developed semantic data cataloging tools for enterprise-wide governance.

2022 - 2023, Senior Data Architect, Raytheon Intelligence & Space

Directed .gov cloud migration and built advanced lead-time, MRP, and simulation models (PFEP/Digital Twins) for mission-critical defense logistics.

2021 - 2022, Principal Program Manager, Web Indexing, Microsoft Bing

Led Bing's index scale-up to 1 trillion pages; conducted core R&D on semantic indexing, embedding quantization, and hybrid search retrieval.

2020 - 2021, Director, EDW Modernization, Hewlett Packard Enterprise (HPE)

Rescued a \$16M failed EDW-to-cloud migration, using ANTLR-based automation to shift 3PB+ data to Spark Delta Lake for under \$500K.

2020 - 2020, Partner Consultant (via SpringML), Google Cloud

Delivered ML pipelines and benchmarked Colab vs Databricks for GCP; implemented scalable data engineering using DataFlow and Kubernetes-based stacks.

2017 - 2020, Director of Data Science, American Express Global Business Travel (GBT)

Launched AmexAI@2020 Program: built trip recommender services, Traveler DNA, Gilbert bots, crisis response dashboards, and revenue optimization engines across global travel supply-chain.

2013 - 2017, Senior Manager, Big Data Programs, Intel Corporation

Built the Integrated Analytics Hub; migrated manufacturing data platforms from Exadata to Kafka/HBase; deployed in-situ yield and defect analytics.

2012 – 2013, Chief Data Scientist, Manta Media

Led analytics for fraud detection, SEO optimization, and listing deduplication; added \$5M in revenue through intelligent targeting of SMBs.

2004 - 2012, Senior Research Scientist, LexisNexis R&D

Built scalable search infrastructure (HPCC), real-time alerting, and semantic deduplication systems. Co-led Watson legal ontology collaboration.

1999 – 2002, Software Engineer & Research Associate, Intel Corporation

Name: Mr. Narasimha "Seshu" EDALA, Address: 2117 Buffalo Gap, Leander TX 78641,
Email: nedala@gmail.com, Telephone Number: 1-614-467-0423, Resume Link:
<http://gnyanai.ddns.net:4041/nedala.pdf>

Contributed to SOAP/UDDI/.NET standards, designed x64 enterprise middleware benchmarks, and delivered StrongARM mobile platform reference designs.

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Education

2004 | Ph.D. Candidate, Computer Science – Wright State University, Dayton, OH

Research included scalable information clustering via locality-preserving hashing, semantic classification at web scale, space-filling heuristics for high-dimensional optimization, and user-personalized topic modeling.

1999 | M.S., Human Factors and Systems Engineering – Wright State University, Dayton, OH

Focused on human-computer interaction in complex systems, Java-based discrete event simulations for USAF logistics optimization, and C2 (command and control) strategy modeling for UAV search and rescue domains.

1997 | B.Tech., Mechanical Engineering – JNTU Kakinada, India

University Valedictorian, Graduated with top honors.

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Accomplishments

- University Valedictorian in Bachelors
- DAGSI Scholar
- Led 25+ enterprise data, analytics platform builds.
- Built and launched 3 venture-backed AI product companies.
- 12 international patents

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Technical Skills Snapshot

Data Engineering & Warehousing

- Enterprise Data Lakes: Spark, Delta Lake, Snowflake, BigQuery, Synapse, Exadata
- ETL Modernization: ANTLR-based translation of Neoview SQL, Informatica, PL/SQL to Spark
- Structured & Semi-Structured Processing: HBase, Kafka, Avro, Parquet, ORC, JSON, XML
- Tools & Pipelines: Data Fusion, DataFlow, PySpark, Kafka Streams

Cloud Platforms & DevOps

- Cloud Expertise: Azure, AWS, GCP (multi-cloud architecture, VPCs, FedRAMP readiness)
- DevOps & IaC: Kubernetes, Terraform, ArgoCD, Docker, Istio, GitOps, CI/CD pipelines
- Hybrid Cloud Migration: Delta Lakehouse modernization, real-time observability, rollback SOPs

Machine Learning & AI

- ML/DL Modeling: Recommenders (GBT), Search Quantization (Bing), LTV, Anomaly Detection
- Generative AI & NLP: RAG pipelines, embeddings, semantic fieldmaps, GPT copilots
- MLOps Tooling: MLflow, Vertex AI, SageMaker, Kubeflow, model drift & retraining

Business Intelligence & Analytics

- BI Platforms: Tableau, Power BI, Looker, Custom web dashboards
- Decision Intelligence: Executive-ready analytics QA, what-if scenarios, metric storytelling
- Cataloging & Metadata: Semantic annotation, lineage tracking, data governance agents

Search & Indexing Systems

- Large-Scale Search: Bing Index, Lexis HPCC, ElasticSearch, Semantic Inference Engines
- AI Search Enrichment: UIMA, OWL, knowledge graph enhancement, deduplication logic
- Retrieval Techniques: Vector quantization, hybrid index (semantic + inverted), result distillation

Mobile, Web, Omnichannel Interfaces

- Frameworks: Flutter, WebAssembly, Android
- Interfaces: Booking chatbots, multilingual agents, responsive analytics dashboards
- Accessibility & UX: Section 508 compliance, voice search, cross-device UI experiences

Security, Governance & Compliance

- Access & Anomaly Detection: Exfiltration tracking, fine-grained access control
- Regulatory Compliance: FedRAMP, HIPAA, GDPR, ITAR
- Data Loss Prevention: Lineage, policy enforcement, secure semantic systems

Programming Languages & Tools

- Languages: Python, PySpark, Scala, Java, SQL, C#, R
- Frameworks & Libraries: TensorFlow, PyTorch, Scikit-learn, XGBoost, Flink, Node.js, D3.js
- Storage & Processing: HDFS, Hive, HBase, Kafka, MongoDB, Redis, ElasticSearch, Delta Lake

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Seshu's education: bachelors BS degree in Mechanical Engineering between 1993 and 1997 at JNTU Kakinada in India

Between 1993 and 1997 (aka 1993, 1994, 1995, 1996, and 1997), Seshu pursued his Bachelors in Mechanical Engineering at Jawaharlal Nehru Technological University (JNTU), Kakinada, Andhra Pradesh in India. Between 1993 and 1997. University Valedictorian (an academic honors).

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Seshu's education: masters MS degree in Systems Engineering & Human Factors Engineering at Wright State University between 1997 and 1999.

Between 1997 and 1999 – aka 1997, 1998, 1999 – Seshu pursued Masters in Human Factors and Systems Engineering at Wright State University, Dayton OH. US. Arrived in US on F1 visa in Sep 1997 and graduated with 3.7 GPA in Jul 1999. Graduate Research Assistant under Dr. Narayanan (then head of the department of human factors and biomedical engineering). Studied concept of humans in complex systems, user interface designs. Built Java based discrete event simulations and modeling infrastructure to optimize materiel planning for USAF sortie and logistics operations. Also investigated complex decision making and optimal outcomes (search & rescue mission effectiveness of rescues, error rates, sweep areas, rescue recoveries) in complex unmanned aerial vehicle swarm command and control fieldcases. Mastered Java AWT, Applet, UI, Swift technologies for developing write-once-run-anywhere applications/applets. Subsequently went from graduate masters program into Intel's Enterprise Services Group investigating emerging distributed computing standards and implementations of the pre-Y2K, .com emergence. Also studied logical entailment and deductive reasoning techniques: developed Prolog and Lisp proficiency.

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Seshu's first entry into commercial job at Intel Corporation (INTC) in 1999.

In July 1999, Seshu joined Intel Corporation as a fresh recent college graduate. He grew from recent college graduate to senior software engineer at Intel's enterprise services group between 1999 and 2001 (aka 1999, 2000, 2001). While there, he investigated enterprise middleware stacks like databases, transactional semantics, message queues, remote procedure protocols, directory and discovery standards, infiniband architectures, network interconnect benchmarks, security, access control, active directory protocols. He also studied emerging W3C and ECMA computing standards of universal plug and play, UDDI, SOAP, XML interchange standards; he participated in the ECMA, W3C standard member representation bodies (on behalf of Intel) to define, benchmark, develop, validate, and drafting continuous evolution of these foundational internet & ecommerce standards. He was largely involved with WSDL and UDDI specification standards; he was also contributing to the first .NET CLR (common language runtime) and C# language spec in close collaboration with Microsoft.

In 2001, Seshu switched to Intel Corp's servers group where he recompiled x86 32 bit applications, drivers, and modules for emerging 64bit x64 architecture. Later, at Intel's wireless client and computing group (WCCG), he defined the new StrongARM mobile processor architecture technical specs, reference board designs, battery and power management ips. He held the technical project manager role for SymbianOS and OS/App stack roadmap for StrongARM product line.

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Seshu returns to Wright State University in 2002 to pursue PhD coursework alongside his wife. He pursues that through 2004 (aka 2002, 2003, 2004). After marrying Lavanya in Sep 2001, Seshu and Lavanya moved to Wright State University's Russ Engineering Center to pursue their PhD and masters under Dr. Narayanan in computer science and systems engineering respectively -- both maintained a consistent 4.0 GPA through their academic coursework. For PhD dissertation: where traditional clustering methods were computationally expensive in $O(N^2)$ -- especially at web search scale -- which disallowed machines to organize and render semantic labels on large datasets, Seshu in his doctoral thesis investigated egocentric heuristic measures (like space filling curves and locality preserving hashing techniques) to cluster large topical spaces in near realtime -- even if that meant reduced accuracy of statistical algorithms. These locality preserving egocentric measures are analogous to positing a class of students by their height using an external height-measure versus permutational comparison between all student pairs. Over the course of his research, Seshu published extensively in the space of information search and retrieval, vector quantization methods, personalization, locality sensitive hashing etc at leading SIGCHI and SIGKDD conferences.

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Seshu abandons his PhD dissertation at Wright State University in 2004 (due to personal circumstances) under Dr. Narayanan's guidance. He consistently excelled at his coursework and candidacy with a 4.0 GPA. Seshu left his doctoral studies in ABD status and switched into a senior research scientist role at LexisNexis's New technology research group. LexisNexis is world's leading knowledge research platform for legal, business, and finance professionals that pioneered binary search and natural language search in 1969. Lavanya joined LexisNexis at a similar time too as a research associate.

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Seshu's experience at LexisNexis between 2004 and 2008 (aka 2004, 005, 2006, 2007, 2008):

LexisNexis is an online leading legal research platform: destinant to many legal, business, and finance professionals. LexisNexis invented binary search: it builds information collections at petabyte scale for nea realtime information on mainframes for legal professionals that foundationally rely on uptodate, accurate caselaw and statutory research. At new technology research labs, Seshu pioneered deep personalization techniques, recommendation systems for upselling subscriptions. He also experimented heavily with hypergraph pagerank measures of centrality for relevance. He also built information push subscriptions and real-time syndication of information alerts. He also addressed the key challenge of scalable information deduplication for news federation services (like LexisNexis, Factiva). He also worked closely with IBM Watson research services group in defining and implementing UIMA, OWL to define news, legal, and financial reporting ontologies. Seshu also built high-speed data integration and indexing pipelines for TotalSearch eDiscovery PaaS product. Through the 4 years, he grew into a consulting research scientist. Two of his seminal contributions in 2007 and 2008 are LexisNexis in-browser toolbar/extensions for in-context user-research as well as infrastructure provisioning/migration from IBM Mainframe to Hadoop.

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Seshu continued his growth at LexisNexis between 2008 to 2012 (aka 2008, 2009, 2010, 2011, 2012) turning into core relevance research and search systems on HPCC.

Seshu continued his progress at LexisNexis, after LexisNexis acquired Seisint in 2008 -- a people/risk intelligence company that had invented enterprise control language (ECL), a declarative language that compiles into distributed Lintel MPP routines – its analogous to Hadoop's massively scale-out processing architecture but predated Hadoop's MapReduce paradigm -- Seshu was the engineering lead in developing information/content extraction/migration strategy to high-performance computing cluster (HPCC). Seshu also wrote the foundation indexing, search, ranking, policy-filtering routines and oversaw first concept of operations of search on HPCC (at \$0.02/search) versus (\$0.23/search on IBM mainframe) -- a total savings of \$80M in 2009. A similar ConOps of XML shredding engine that allowed rolling-up micro-mutable multiversioned concurrency controlled segments saved another \$50M for LexisNexis. Besides, Seshu drove the IBM engagement for Watson-Lexis collaboration: first AI infused legal research platform that used distributed knowledgegraphs for QA. Seshu also was instrumental in building patent search (emerging patent/IP trends -- BI analytics research/notifications platform for corporate IP lawyers).

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Seshu joins Manta Media as chief data scientist between 2012 and 2013.

In 2013, Seshu and Lavanya relocated to Columbus OH (for Lavanya's LimitedBrands job). Seshu assumed the role of chief data scientist (a role that was still coagulating in the industry) at Manta Media, a small and medium business listings company that helped SMBs with freemium social, web, and mobile audience. It was critical for Manta Media to protect licensed D&B content from exfiltration and robotic traffic of abuse. It was also critical to captivate web audience and optimize PPC and PPV revenues by optimizing SEO rankings for SMB non-technical audience. It was equally important to upsell co-branded partnerships (for example chartered accountants with tax professionals) using great recommendation engines. Seshu built and operationalized fraud prevention, exfiltration protection, recommendation services, listing deduplications, keyword bidding optimization, SEO keyword injection, log monitoring services at a scale of 30M/day traffic. Added \$5M data science revenue in 2013 to the \$11M revenue in 2012 within one year.

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Seshu returns to Intel in 2013 as a big data architect and continues there through 2017 (aka 2013, 2014, 2015, 2016, and 2017). Between 2013 and 2017, Seshu returned to Intel -- first as a Big Data Architect at Intel IT -- spearheading the buildout of Intel's integrated analytics hub (IAH) -- a singular data lake for enterprise -- finance, operations, supply chain, sales, marketing, human resources (FOSHS), information security & analytics: a huge undertaking that integrated over 100 sources of heterogenous use, speed, structure, utility to overcome data quality, costs, duplicity, and pan-datamart challenges. IAH panned a savings of \$600M over 5-year period.

Also spearheaded big data program management office to steer the analytics 3.0 transformation across Intel's analytics divisions. Seshu remained hands-on implementation and thought leader during the IAH implementing exfiltration spotting engine, hardware MTBF predictive observability engine, social media monitoring toolkits etc.

The IAH transformation garnered substantive attention from Intel's technology and manufacturing group -- when in 2015, Seshu was promoted as a senior manager with the Intel's logic technology development group -- to lead manufacturing analytics hub (MAH) implementation from older TIBCO and Exadata warehouse to Kafka, Spark Datalake house for low-volume manufacturing (LVM) first and HVM after.

Storing long die pedigree data (a timeseries ordinal database of material-process-timing-state events) in Exadata, a relational warehouse to create tall lean tables was regressive before Seshu pivoted the implementation to pedigree-native HBase (with JDBC query layer) to allow both table-level aggregate analytics and row-level analytics across geo-distributed factory floors. During this transformation while leading the big data change control management, Seshu also worked on --

- 1) building in-situ pushdown server-side yield analytics that runs defect provenance for sort and die defects directly atop the LTD cluster than client-side surgical analytics,
- 2) Built factory improvement tracking for automotive products (along with corporate quality network) to allow for 8D continuous detection & improvement; implemented SCADA interfaces for material routing, probing, end-of-line screening, and RMA analytics,
- 3) implemented numerous stochastic process control (SPC) methods to sort, screen, bin, and route material along optimized monte-carlo paths, and
- 4) spearheaded Mfg DevOps -- a stage-gated model build, certification, release/rollback change-control standard operating procedures (SOPs) to minimize wafer-in-progress (WIP) material losses.

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Experience: Seshu joins American Express Global Business Travel – a corporate travel service provider – a partnership between Amex and Certares capital: he continues there through 2020 (aka 2017, 2018, 2019, and 2020). Seshu joined Amex Global Business Travel (GBT) -- a business travel services company -- as the director of Data Science -- a non-existent business function at the new partnership. Seshu was instrumental in designing and delivering AI@GBT mission 2020 -- a comprehensive infusion of data science and AI driven customer acquisition, service delivery, engagement process, and inventory optimization. For example: --

- 1) Trip Recommendation System (TRS) -- trip-as-a-service upselling, cross-selling "attachment-promoting" recommender that combines policy, content, collaborative, context, delivery techniques. TRS started generating \$4M+ revenue from year 1 -- with a progressive uptake improving from 4% click-rates on email channels -- to turning into a mobile upselling and online-booking (OBT) platform service in 2020.
- 2) Built traveler DNA -- a comprehensive personalized analytics platform that mined tacit behavioral patterns of the users (travel propensity spatio-temporal-loyalty preferences of travelers which weekday/time/brand/air/hotel/rental/terminal/destination/payment methods etc) to reduce courtship time on the telephonic channels; later extended as an omnichannel analytics service to maximize travel counselor utilization and improve NPS score of the customer.
- 3) building a customer LTV pipeline -- a lead generation, sales, customer retention, account-delegation funnel -- to identify and keep new business prospects: retention rates from the second year consistently hovered >90%; the acquisition rates hovered around 30%.
- 4) built digital front (digital home skills with STT), mid, backoffice automation assistants to manage the RPA and service delivery using RASA toolkits.
- 5) Created "traveler dash" (email, browser, chat plugins) -- similar to Amazon dash -- to allow ez-bookings for travelers.
- 6) Developed pre-travel (client policy compliance), in-travel (service excellence), post-travel (expense reclaims, NPS scores) triaging/MDM solutions to reconcile planning, execution, wastage metrics under premier insights (BI) for client travel officers.
- 7) delivered workforce planning and scheduling charts for supervisory oversight of multilingual, globally distributed telephony, email, online flex/client-dedicated travel counselors -- the planning tool used both traditional forecasting methods as well as weather/incident/emergency outlier events (from travel, weather, news advisories).
- 8) implemented industry and peer-benchmarking insights for fortune 50 travel planning and travel policy shaping via premier insights,
- 9) implemented mobile/responsive functions in flutter (as part of the larger AmexGBT app) for essential travel services (like push notifications/reminders, expense snapping, social commentary/sentiment analysis).
- 10) Built business observability monitors ("HawkEye") for prescient insights to key performance indicators like bookings, cancellations, volume, loyalty shifts as early distress signals for corrective actioning. For example, the COVID booking trends that started in Feb (which put Seshu's AI group on furlough due to travel bans) in Feb showed distressed signals as early as the first week of December 2019.

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Seshu joins HPE in 2020 after losing his role at GBT due to COVID virus. Seshu's career at AmexGBT enters "furloughed" state due to global travel shutdown. Furloughed in early 2020 from GBT, Seshu joined HPE as the director of enterprise data warehouse (EDW) modernization. Faced with dying hardware of Seaquest EDW appliances that had reached EOL status a decade before 2021, the 3-way EDW ring implementation was costly, inaccurate, and lagging in SLA/OLAs; the original plan of \$16M plan (\$8M was specifically for code & data migration) to migrate to cloud was designed to rewrite -- but never attempted between 2018-21 by the contractor workforce -- facing hard deadlines of DXC cutting off access in 2021, Seshu pivoted from the "rewrite" pattern to a demand/profiling-based "lift-n-shift" design pattern. He not only proposed the pivot but quickly wrote ANTLR lexers/parsers to unknot 115K ETL scripts (over 3 millions lines of Neoview SQL code), 3PB data tiers, 40K adhoc + structured reports/day to translate the DW implementation to Spark Delta Lake in under 4 months at approximately \$500K budget. <https://nedala.github.io/deltalakehouse/> is a blog documenting the path.

In addition to being a heads-down hands-on cloud modernization architect, Seshu managed a global pool of 50 engineering and program professionals across four countries in India, Mexico, US, and Germany. The automation toolkits (scanners, lexers, parsers, translators, composers, access migrations etc) of cloud migration allowed for transitional run of EDW to cloud in a hybrid-parallel mode first and in global VPC exclusive mode second.

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In 2020, Seshu also worked as a Google Cloud Consultant for Google Cloud (via SpringML, Google's Gold partner). Seshu helped notable fortune clients (references provided on request) to move their data pipelines to the cloud using DataFlow + DataFusion, enable in-situ analytics atop BigQuery, process large datasets on GCS using DataProc, containerize services using mesh technologies like k8s + Istio, implement AutoML & MLOps SaaS training + inferencing using CloudRun, TFRun (Tensorflow, Kubeflow) etc.

Seshu also played deep technical competitive intelligence consultant role for Google (on Google's request) to benchmark Google Colab, Google Notebooks and Databricks Notebooks for GCP's market research -- to allow feature planning, pricing and release go-to-market (GTM) planning.

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Experience 2021: While GAMA (Google, Apple, Microsoft, Amazon) remains an elusive dream for techies, Seshu proudly joined Microsoft Bing as the Principal Program Manager for Bing's build-n-serve indexing platform. At Microsoft, Seshu delivered two critical projects –

- 1) meticulous planning and execution of scaling up index size from 400B pages to 1 trillion pages under the able leadership of Mikhail Parakhin (then Bing CEO). The scope ranged from the page acquisition, page segmentation, semantic embeddings and content understanding, content sharding and inverted indexing, results T1, T2, T3 distillation, ranking, to the presentation: both function + performance.
- 2) Conduct research for pivoting from Term Inverted Index (fast but incomplete) or Document Indexes (complete but wait until critical quorum responds) to a semantic quantization fieldmap indexing as the most effective hybrid method that fits the best performance and relevancy imperatives of CX.

Seshu quit Microsoft unable to meet the RTO mandate in Seattle while living in Austin TX.

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Seshu joined Raytheon Technologies (RTX) in 2022 (aka 2022, 2023). Between 2022 and 2023, Seshu worked for Raytheon Intelligence and Space: building .gov secure cloud infrastructure and migration strategy -- an end-to-end data analytics strategic vision + implementation - from ingress to intelligence services. Seshu worked on both strategic design, migration planning as well as data/script migrations from SQL datamarts and PowerBI charts to cloud-native Azure services.

Seshu also worked on material resource planning (MRP)'s critical lead-time analysis (via both parametric analysis and non-parametric methods) to optimize inventory procurement, supplier selection, client delivery planning, assembly cycle times etc. These programs -- unlike normal HVM manufacturing -- rely on specialist parts and specialist personnel that cannot be redundantly shelved or pre-emptively scheduled: DoD imposes fines for program delays that cannot be simply passed to the supply chain. Seshu developed numerous data integration and cycle time calculators for multiple Raytheon programs. He also developed Plan-for-every-part (PFEP) simulations (both discrete event simulations as well personnel digital twins) to model complex nearline adaptive plans for McKinney TX based Raytheon factories to minimize wastage, maximize utilization, shorten quality latencies, and optimal MTBF predictions. Some of these programs/products exceeded \$B in value.

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Seshu -- wishing to enter into federal service -- joined Mantech's Department of Homeland Security (DHS) USCBP (Customs and Border Patrol) TASPD (targeting analytics program directorate) in 2023 as a principal AI consultant delivering on --

- 1) FinCEN financial intelligence/crime linkgraph syndicate nexus models digging up latent tacit associations
- 2) SONAR (synthetic narcotic screening) models for preemptive cargo/shipment/passenger screening,
- 3) vehicular smuggling & human trafficking flagging models,
- 4) improved harmonized tariff schedule cargo coding for better tariff segmentation,
- 5) created open source based local ChatGPT clone implementation free of leakage issues for border officer terminals, and
- 6) built AI analytics hub -- a suite of agentic and generative AI services like language translation assistant, search augmentation assistant, data cataloging assistant, powerpoint research assistant, OCR assistant, coding assistant, harmonized tariff schedule (HTS) tariff coding assistant, MLOps assistant, code translation assistant, entity graph knowledgebase query assistant etc.

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In Jun 2024, Seshu joined the national technical information service (NTIS), a non-appropriated department of commerce agency, that thus far was a federal STEM information clearing house for American knowledge workers was pivoting to becoming a fee-based not-for-profit fed2fed data and digital consultancy which created superior outcomes for other federal agencies' data, digital, cloud, and AI needs. After all, DoC was the .com office for gov and NTIS is the .ai office for DoC.

Seshu is the associate director (reporting to the CEO of the agency) to define, develop, and deliver on this pivotal transformation of the agency. Among its \$MM projects in the first 9 months, Seshu developed AI, Data, Digitization, Accessibility, RPA, IT, Cloud (functional and risk profiles), recommended strategic investments, recruited joint venture partners (private/academic partners to co-create information solutions for the federal clientele) ecosystem, and "created" (built and demonstrated) many of transformative products for the agency before the presidential transition. Seshu was leading the office of data services (ODS) as the associate director at NTIS, Seshu was the resident data management, machine learning, data science, artificial intelligence (Generative AI, agentic AI, sensory/perceptive AI), process automation (RPA workflows), digitization (OCR and segmentation), information search (semantic search for NTRL), information copilot services (for organizational maturity), FFRDC liaison (for sponsoring customer, market, technology research), CIO consultant for SecDevOps.

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