Dean M. Bisogno

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SUMMARY

Data and platform engineer who designs and builds pipelines, models, and applications that turn messy operational data into production systems. Ph.D. in mathematics with peer-reviewed research, paired with hands-on delivery: dbt and Snowflake at enterprise scale, full-stack Python and TypeScript applications, and a multi-repository data platform built solo for an education non-profit. Six years building production software before graduate school. Seeking deep technical work as a senior individual contributor or hands-on technical lead.

PROFESSIONAL EXPERIENCE

People Analytics Director (analytics and data engineering), JBS USA, Greeley, CO Mar 2022 – Present

- Lead enterprise analytics and data engineering for HR leadership, the CHRO and CFO, Legal, business-unit heads, and the JBS S.A. board across North America, Europe, Australia, and Brazil.
- Contribute to the enterprise dbt monorepo on Snowflake across Finance, HR, Sales, Supply Chain, and Operations: rebuilt UKG absenteeism models to unify paycode and attendance-event absences with seed-backed classification and tests; eliminated US/CA/MX headcount drift by freezing closed fiscal periods and making location lookups deterministic. Staging/intermediate/mart layers, SQLFluff, PR review.
- Lead migration of 40+ data products from Dataiku to dbt and Snowflake, sequenced around concurrent UKG and LMS transitions, after co-leading platform selection with IT.
- Design and build an internal HR application platform: React/TypeScript front end on FastAPI, server-side manager-scope authorization, and Snowflake access through dbt-governed mart contracts. Architecture decision records, working fakes for every external dependency to run offline, CI in Azure Pipelines.
- Built a full-stack financial ledger app (TypeScript, Next.js, React, PostgreSQL) from first commit to beta in two weeks: integer-cent money, append-only ledger enforced by database triggers with reversal entries for corrections, departure detection through Snowflake, forward-only migrations, and tests against real Postgres, including one that fails the build if any route lacks an authorization policy.
- Design a global HR star schema and standardize turnover and retention definitions with regional peers so new metrics follow one reporting standard. Administer Snowflake access, network policies, and authentication; set governance standards adopted outside analytics.
- Build and run a production absence-reporting pipeline (Fivetran and Python API ingestion, Snowflake, dbt, Qlik), surfacing unclassified absences through paycode analysis and worked-hours reconciliation of timecard data.
- Automated a weekly COVID-19 facility risk report for every JBS and Pilgrim's plant, joining CDC public-health APIs, including wastewater surveillance, with internal vaccination data into PDF tables, maps, and trend charts. Ran weekly for two years, reworked as public sources were retired.
- Help lead the company's AI adoption program: built the agentic-coding business case with the executive team, ran an internal Claude Code workshop, published shared team tooling, and built a cost-attribution ledger loading token usage idempotently into Snowflake with effective-dated pricing and a Streamlit dashboard.
- Lead and mentor a three-person analytics team; elevated a team member into the manager role and advise on technical hiring across business units. Recruited and trained a senior hire to take over compensation program administration, refocusing my role on analytics and engineering.

Volunteer Data Platform Engineer, Institut Sangalkam, Senegal (education non-profit) Jun 2026 – Present

- Sole engineer and architect of a multi-repository data platform turning 22 years of Senegal's national school census (2002-03 to 2023-24) into analysis-ready data and dashboards for a three-person think tank. Governed by a written decision register and status ledger, with explicit data contracts, manifests, and hash-pinned handoffs between layers.
- Built the extraction layer: Python pipeline reading proprietary Microsoft OLAP cubes into SQLite star schemas (about 20M rows), reconciling every measure's drill-through sum against its MDX grand total. Isolated the Windows-only ADOMD.NET driver stage from a portable, stdlib-only build stage behind a CSV contract.
- Recovered nine school years locked in SQL Server 2000-era cube formats that modern drivers cannot open: installed legacy 32-bit OLE DB provider manually on Windows 11 and moved to query decomposition to extract data within 32-bit addressable memory.
- Built the conforming layer in dbt and DuckDB: reconciled vocabularies across three source generations and issued permanent IDs for 36,000+ schools linked across years under reviewed linkage rules; changes that would merge, split, or drop an issued ID are refused. Publishing is blocked while any draft ID remains, then commits Parquet star

schemas with manifests to a git-versioned transfer repository, behind tests that include negative controls.

- Deployed Apache Superset on Render (Docker, Postgres metadata) querying published Parquet in place through DuckDB, with every file verified against its manifest sha256 at boot and DuckDB confined to published files. Sized by concurrent worst-case load tests; roles down to view-without-download; chose managed hosting after costing alternatives.
- Built reference ingestion from World Bank, UNESCO UIS, UN population, and national statistics sources, including a spec-driven reader for PDF-only regional indicators, gated by validation against external benchmarks and internal consistency. Wrote a separate reader for the one year with no cubes and documented its weaker reconciliation guarantee.

Data Scientist II, JBS USA, Greeley, CO Feb 2021 – Mar 2022

- Co-led platform evaluation with IT, selecting Snowflake and Dataiku, and built the initial ETL pipelines and Python tooling still in production.
- Rapidly designed, built, and deployed VaxTrax, an in-house COVID-19 vaccination reporting app in Python and Flask, from scratch ahead of OSHA emergency directives. About 150 site HR users signed in through Active Directory and uploaded 750+ rosters, validated against a schema with whole-sheet error collection and row-level correction workbooks, on an offline Windows server deployed from bundled dependencies.
- Built a graph-based simulation of viral transmission in processing facilities, modeling each shift as a connected small-world (Watts-Strogatz) contact network with vaccination, masking, and variant R0; packaged as a reusable Python library to forecast policy efficacy during surges.
- Took a supervisor turnover-risk model from pitch to pilot in ten weeks: XGBoost on point-in-time features grouped into themes, explained with SHAP as plain-language one-page risk profiles for about 300 supervisors, delivered in Qlik Sense with location-level row security and tracked against actual departures through the pilot quarter.
- Measured the dose-response relationship between individual overtime and recordable injuries across roughly 5M employee-days a year over four years, joining timekeeping, safety, and location data from three systems with mismatched keys. Findings supported overtime-policy discussions with safety leadership.
- Mapped labor-market competition for every facility: geocoded 300+ sites into a distance matrix and briefed each business unit on its most exposed facilities and job families.
- Named 2022 Innovator by JBS Center for Innovation and Technological Excellence.

Graduate Research & Teaching Assistant, Colorado State University, Fort Collins, CO Aug 2015 – May 2021

- Built research software in Python, Magma, and Gap to automate verification of open problems in algebraic number theory, contributing to two peer-reviewed publications.
- Led a six-person undergraduate research team studying curves amenable to cryptographic applications, mentoring students in mathematical theory and scientific programming.
- Taught Cryptography, Group Theory, Linear Algebra, and Calculus. Awarded Outstanding Graduate Teaching Assistant.

Lead Developer, Paladin Innovators, Federal Way, WA Sept 2009 – Jun 2015

- Built early live video streaming platforms at a startup, for clients including a faith ministry's live speaking events and daily prayer broadcasts and a University of Phoenix commencement. Spanned server infrastructure (C#, Python), web clients, and interactive viewer control; managed a contract iOS developer, leading the app's design and contributing to implementation. Named inventor on three published U.S. patent applications anticipating capabilities now standard in cloud streaming.
- Built a browser-operated live video switcher: Node.js/Express control plane registering camera feeds in Redis and routing any source to program output by supervising ffmpeg stream-copy processes, starting each new route before stopping the old for uninterrupted switches. MongoDB configuration; ran against Wowza and live555 RTSP servers.
- Built a phone-friendly web remote for Telestream Wirecast: Node.js server driving Windows COM automation (first in Perl, then ported to JavaScript) for shot switching, broadcast, and recording, discoverable over Bonjour/mDNS, with unit tests. Added an Express and Redis update service notifying desktop clients of new or required versions.
- Built a C# desktop ingest and mixing app on a commercial media SDK, compositing multiple live camera captures into a program feed, with picture-in-picture layers moved and resized on the preview through aspect-ratio-corrected coordinate mapping.

RMA and Warehouse Manager, Koolance Inc., Auburn, WA Jul 2007 – Sept 2009

- Ran returns, repair, and product testing for a maker of liquid-cooling systems for high-performance PCs; coordinated orders between distributors and resellers.
- Managed the customer community, an entry point into the region's enthusiast-hardware and technical scene.

EDUCATION

Ph.D., Mathematics, Colorado State University, Fort Collins, CO Fall 2020
Dissertation: *Arithmetic Properties of Curves and Jacobians*, comprising the three papers under Research. Advisor: Rachel Pries.

M.S., Mathematics, Colorado State University, Fort Collins, CO Spring 2018
Thesis: *Abhyankar's Inertia Conjecture for the Mathieu Group M11*. Advisor: Rachel Pries.

B.S., Mathematics, Colorado State University, Fort Collins, CO Summer 2015

A.A., Pierce College, Puyallup, WA June 2012

RESEARCH

Arithmetic geometry in positive characteristic: Galois covers of curves and Jacobians.

Abhyankar's Inertia Conjecture for Some Sporadic Groups. Dean Bisogno. Preprint. arXiv:2010.01455 (2020).
Shows that every possible inertia group occurs for G-Galois covers of the affine line, for certain sporadic groups in particular characteristics. For a larger set of sporadic groups, shows that all but finitely many ramification invariants occur, including all but eight for M_{11}. Extends the M.S. thesis.

Group-theoretic Johnson classes and a non-hyperelliptic curve with torsion Ceresa class. Dean Bisogno, Wanlin Li, Daniel Litt, Padmavathi Srinivasan. Épijournal de Géométrie Algébrique Volume 7 (2023). doi.org/10.46298/epiga.2023.volume7.6849.
Constructs group-theoretic analogues of the Johnson/Morita cocycle for pro-ℓ groups and applies them to étale fundamental groups of curves. Uses them to give an example of a non-hyperelliptic curve whose Ceresa class is torsion under the ℓ-adic Abel-Jacobi map.

The Supersingularity of Hurwitz Curves. Erin Dawson, Henry Frauenhoff, Michael Lynch, Amethyst Price, Seamus Somerstep, Eric Work, Dean Bisogno, Rachel Pries. Involve, a Journal of Mathematics 12-8 (2019). doi.org/10.2140/involve.2019.12.1293.
Characterizes exactly when the Hurwitz curve $X^nY^\ell + Y^nZ^\ell + Z^nX^\ell$ is supersingular over $\mathbb{F}_p$, with a complete table for genus below 5 and characteristic below 37. Written with the 2018 REU team I advised.

INVITED TALKS

A non-hyperelliptic curve with torsion ℓ-adic Ceresa class. Joint Mathematics Meetings, Denver, CO. Winter 2020.

A non-hyperelliptic curve with torsion Ceresa class. Front Range Number Theory Day, Colorado State University. Fall 2019.

Abhyankar's Inertia Conjecture for some sporadic groups. Geometry and Arithmetic of Surfaces, University of Wisconsin, Madison, WI. Spring 2019. Also at the Western Algebraic Geometry Symposium, University of Oregon, and Front Range Number Theory Day, Fall 2018.

SEMINAR TALKS

About a dozen talks in Colorado State University's SPLINTER, Greenslopes, and Number Theory Lab seminars, 2016 - 2020, on topics including étale cohomology, perfectoid spaces, algebraic cycles, and isogeny graphs of supersingular elliptic curves.

TEACHING

Instructor of record, Colorado State University, 2015 - 2021.

- MATH 155, Calculus for Biological Scientists I, six semesters, Fall 2015 - Spring 2018: calculus taught from a dynamical-systems perspective.
- MATH 229, Matrices and Linear Equations, Fall 2018 and Spring 2019.
- MATH 160 and MATH 161, Calculus for Physical Scientists I and II, Summer 2019 (online); MATH 161, Fall 2019 - Fall 2020.
- MATH 360, Mathematics of Information Security, Summer 2020 (online): cryptography and its group theory.
- MATH 141, Calculus in Management Sciences, Spring 2021.

Graduate student advisor, REU in Arithmetic Geometry, Summer 2018: led a six-student team whose work became *The Supersingularity of Hurwitz Curves*.

SERVICE

Organizer of the SPLINTER graduate seminar (Fall 2020) and the Greenslopes seminar (Spring 2018). Treasurer, CSU student chapter of the American Mathematical Society, 2019 - 2020.

HONORS

Outstanding Graduate Teaching Assistant, Colorado State University, 2018. Innovator, JBS Center for Innovation and Technological Excellence, 2022.

PATENT APPLICATIONS

Published U.S. applications, Paladin Innovators LLC, not pursued to grant.

Mechanics and Processes for Remote Control of Live Video Production. Dean Bisogno, Joshua Sniffen, Thomas Curran. US 2015/0110166 A1, filed October 2013, published April 2015.

Methods & Systems for Transmission of High Resolution & Low Latency Data. Jonathan Clem, Dean Bisogno. US 2015/0350289 A1, filed May 2014, published December 2015.

Protocols & Mechanisms of Comm Between Live Production Server and Mobile or Remote Clients. Jonathan Clem, Dean Bisogno. US 2015/0350041 A1, filed May 2014, published December 2015.

SELECTED SCHOOLS & WORKSHOPS

AMS Mathematics Research Community: Explicit Methods in Positive Characteristic (2019). Arizona Winter School: Iwasawa Theory (2018) and Perfectoid Spaces (2017). Sage Days 86.5, PIMS Workshop on Computational Arithmetic Geometry, Simon Fraser University (2017). *Mathematics is a long conversation*, a celebration of Barry Mazur, Harvard University (2018).

SKILLS

Cloud & Data Platforms: Snowflake, dbt, Fivetran, DuckDB, BigQuery, Dataiku, Apache Superset, Parquet, SQLite, PostgreSQL, MongoDB, Redis, Qlik Sense
Languages & Frameworks: Python, SQL, Pandas, NumPy, FastAPI, Flask, Streamlit, TypeScript, JavaScript, React, Next.js, Node.js, C#
AI/ML: PyTorch, scikit-learn, XGBoost, SHAP, networkx, Claude Code, Snowflake Cortex, GitHub Copilot
Statistics & Methods: Statistical analysis, regression, gradient-boosted trees, quasi-experimental analysis on observational data, dimensionality reduction, graph modeling
DevOps & Tools: Linux, Docker, Git, CI/CD, Azure DevOps, Azure Pipelines, Windows Server, IIS, Apache, Render