MILENA BELIANOVICH HOLTMAN
Software Engineer
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SUMMARY
Driven Software Engineer with strong foundations in data structures, algorithms, and systems design. Experienced in building scalable machine learning pipelines, performance-optimized numerical systems, and full-stack web applications. Comfortable working across backend, data infrastructure, and frontend environments, with strong emphasis on clean architecture, reproducibility, and performance optimization.

SKILLS
Languages: Python, MATLAB, Java, C/C++, SQL, TypeScript, R.
Backend & Frontend/Systems: OOP, REST APIs, JSON/HTTP, Linux, Git/GitHub, unit testing, data pipelines, distributed workflows, HPC (OpenMP/MPI); JavaScript, HTML, CSS, React(Next.js); Microsoft Office.
Data & Infrastructure: PyTorch, NumPy, Pandas, FEniCSx, data modeling, performance profiling, reproducibility workflows.

PROJECTS
- **Unified Framework for Efficient Kernel and Polynomial Interpolation(First-Author Paper, 2025):** Designed and implemented a modular numerical framework unifying compactly supported kernels with multivariate polynomial bases. Built optimized linear algebra routines and evaluated numerical stability and boundary behavior across multiple domains. Reduced computation overhead through structured matrix operations and performance profiling. Stack: MATLAB, Python, NumPy (linear algebra), Git, Linux.
Repo: github.com/milenabel/ufekp Arxiv: https://arxiv.org/abs/2507.12629
- **Research Lab Website (Full-stack, in progress):** Designed and implemented a modular React/Next.js web application for research dissemination. Built reusable TypeScript components and structured application architecture for scalability and maintainability. Currently integrating model-driven content rendering and LLM-backed features. Stack: React/Next.js, TypeScript, Git. Repo: github.com/milenabel/labsite
- **Operator Learning System (DeepONets):** Designed and implemented modular training pipelines for dual-branch neural architectures supporting PDE learning on manifold domains. Added deterministic seeding, experiment tracking, and automated generalization metrics for reproducible evaluation. Stack: Python, PyTorch, Matplotlib.
- **Predictor-Corrector ML Pipeline with Two-Phase Training:** Implemented configurable two-stage training schedule (baseline + Taylor-enhanced loss) with automated checkpointing and metric logging. Designed extensible pipeline components for experimentation and model comparison. Stack: PyTorch, NumPy, Git, Linux.
- **Finite Element Data Processing Pipeline:** Built data ingestion and transformation pipeline converting high-resolution FEM outputs (168×168) to standardized coarse grids (48×48). Designed reusable loaders, dataset splits, and evaluation utilities for scalable experimentation. Stack: Python, FEniCSx, NumPy, Matplotlib, Git, Linux.

EXPERIENCE
Graduate Research Assistant, Scientific Computing, University of Utah | Jan 2024-Dec 2025
- Designed and maintained modular ML training pipelines with reproducible configuration, fixed-seed determinism, and structured experiment tracking.
- Profiled and optimized compute bottlenecks; refactored vectorized kernels, reducing per-epoch runtime ~35% on Linux HPC clusters (SLURM).
- Built data preprocessing, transformation, and evaluation workflows for large scientific datasets.
- Collaborated across research teams; maintained clean Git workflows, documentation, and reproducibility standards.

Graduate Teaching Assistant, Discrete Mathematics, University of Utah (Salt Lake City, UT) | Aug 2023-Dec 2024
- Led weekly lab sessions for 250+ students, reinforced data structures, algorithmic reasoning, graph theory, combinatorics, and proof techniques. Developed grading rubrics and structured feedback processes to ensure consistency and clarity. Communicated complex technical concepts clearly to diverse audiences.

EDUCATION
M.S. Computing (Scientific Computing/Data Management & Analysis), University of Utah | 2022 - 2025 *GPA: 3.65*
Relevant coursework: Data Structures & Algorithms, Database Systems, HPC (OpenMP/MPI), Numerical Linear Algebra, Optimization, Advanced Algorithms, Machine Learning, Data Mining, Scientific Visualization, Scientific Computing I-II.
B.S., Applied Mathematics (CS concentration, BA minor), University of Northern Colorado | 2019 - 2022 *GPA: 3.70*
Relevant coursework: Discrete Mathematics, Data Structures & Algorithms, OOP(Java), Linear Algebra, Probability & Statistics, Numerical Methods, Numerical Analysis, Applied Statistics, Data Science, Differential Equations I-II.