MILENA BELIANOVICH HOLTMAN
Software Engineer

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SUMMARY

Driven Software Engineer specializing in Python, with a solid foundation in data structures and algorithms. Experienced in developing advanced machine learning models and optimizing computational performance in high-performance computing environments. Passionate about leveraging technology to solve complex scientific problems and improve data-driven decision-making.

SKILLS

Languages: Python, MATLAB, Java, C/C++(medium), JavaScript(basic), HTML(basic), CSS(basic), React(basic), SQL(basic), TypeScript(basic).

Backend/Systems: Linux, Git/GitHub, REST APIs (basic), JSON/HTTP, unit testing.

Data/ML: PyTorch, NumPy, Pandas, FEniCSx, matplotlib, scikit-learn.

CS: Data Structures & Algorithms, OOP, Numerical Methods, ML, NLP, LLM, Data Science.

PROJECTS

- **First-Author Paper "A Unified Framework for Efficient Kernel and Polynomial Interpolation"** (arXiv:2507.12629, 2025). Unified compactly-supported kernels with multivariate polynomials; implemented efficient linear-algebra routines; demonstrated accuracy gains on domains with boundaries. Stack: MATLAB/Python (linear algebra). Repo: github.com/milenabel/ufekp. Arxiv: https://arxiv.org/abs/2507.12629
- **Laboratory website (in progress):** Designed and implemented a website for the current research group using React (Next.js). Implementation left: adding usable models in a better way, LLM. GitHub: github.com/milenabel/labsite The current version is hosted on GitHub only and will be deployed soon. Stack: React/Next.js, TypeScript.
- **Operator Learning on Manifolds with DeepONets:** Implemented dual-branch DeepONet (functions+normals) for PDEs on torus/sphere; added held-out generalization tracking and seeded runs. Stack: Python, PyTorch, Matplotlib
- **Predictor-Corrector DeepONet + Taylor Loss:** Continuation of the previous project. Two-phase schedule (75% baseline/25% Taylor) with automated checkpoints/plots. Stack: PyTorch, Matplotlib.
- **FEM:** Coarse-grid learning pipeline interpolated 168×168 FEM to 48×48; standardized loaders/splits/metrics. Stack: FEniCSx, NumPy, Matplotlib.
- **Other relevant implementations (see GitHub):** DeepONets, DM/DB projects, OL solvers, Visualization projects.

EXPERIENCE

Graduate Teaching Assistant — Discrete Mathematics, University of Utah (Salt Lake City, UT) *Aug 2023–May 2025*
- Supported a 250+-student course each semester; led weekly lab sections and facilitated active problem solving.
- Held office hours and online Q&A; graded assignments/exams using clear rubrics; proctored and handled regrades.
- Organized exam reviews and solution walkthroughs with the teaching team; emphasized proofs, induction, modular arithmetic, graphs, combinatorics.

Graduate Research Assistant — Scientific Computing, University of Utah *Jan 2024–Present*
- Engineered PyTorch training pipelines for DeepONet variants (dual-branch, predictor-corrector, Taylor-enhanced); added generalization-error reporting and fixed-seed reproducibility.
- Profiled data paths and vectorized kernels; reduced per-epoch time by ~35% on Linux/HPC (SLURM).
- Produced reproducible notebooks/plots; collaborated on ablations and method choices; maintained clean Git history and READMEs.

EDUCATION

M.S. (in progress), Scientific Computing — University of Utah, Kahlert School of Computing *2023–2025 (December)*
- Relevant coursework: Data Structures & Algorithms, Machine Learning, Data Mining (DM), Scientific Data Visualization, Scientific Computing I-II, Computational Geometry, HPC (OpenMP/MPI), Scientific/ML (PyTorch), Numerical Linear Algebra, Numerical Analysis/PDEs, Optimization, Advanced Algorithms, Database Systems (DB).

B.S., Applied Mathematics (CS Concentration, BA minor) — University of Northern Colorado *GPA: 3.70*
- Relevant coursework: Discrete Mathematics, Data Structures & Algorithms, OOP (Java), Database Systems, Linear Algebra, Probability & Statistics, Numerical Methods, Physics I–II, Calculus I-III, Complex Analysis, Numerical Analysis, Applied Statistics, Data Science, Differential Equations I-II.