Kal Parvanov

🏠 Boulder, CO

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SUMMARY

Third-year MS Applied Mathematics student at CU Boulder, specializing in machine learning and data science. I have a solid background in mathematical modeling and statistical analysis, ready to leverage my skills in ML and data science positions. Graduating in May 2024 and eager to contribute to innovative projects.

TECHNICAL SKILLS

Programming Languages: Python, R, SQL
Libraries/Frameworks: TensorFlow, PyTorch, sklearn, pandas, NumPy, SciPy, Matplotlib, plotly
Development & Version Control Tools: Git, Docker, Jupyter Notebooks, VS Code, LaTeX

PROJECTS

ODE Solution via PINNs | *Python, TensorFlow*   Oct. 2023 – Dec. 2023
- Solved the damped unforced pendulum problem with PINNs, demonstrating effectiveness in complex ODEs.
- Generated synthetic pendulum dynamics data using *scipy.solve_ivp*.
- Implemented a PINN in TensorFlow, embedding physical laws into loss functions.
- Proved PINN's superior pendulum motion prediction, showing real-time application potential.

WORK EXPERIENCE

Graduate Teaching Assistant   Aug. 2021 – Present
University of Colorado Boulder   *Boulder, CO*
- Assisted in Calculus I-III classes, promoting the success of 80 students.
- Led weekly 50-minute recitations to improve student understanding of complex concepts.
- Created and graded assignments, offering constructive feedback to enhance learning.

Data Analyst   Aug. 2020 – January 2021
Straight Forward Concepts   *Evanston, IL*
- Managed GameStop's analysis for customer segmentation and cost reduction.
- Optimized data workflows with advanced automation scripts.

Data Analyst   June 2019 – July 2019
Straight Forward Concepts   *Evanston, IL*
- Built CVS's overhead dataset for a machine learning classifier.
- Crafted scripts boosting efficiency in data processing pipelines.

RESEARCH EXPERIENCE

James Rocco Quantitative Research Fellowship   Sept. 2018 – Oct. 2020
Lake Forest College   *Lake Forest, IL*
- Analyzed market shifts via PCA on a decade of S&P 500 data for regime detection.

Graduate Research in High-Dimensional Probability   May 2023 – Oct. 2023
University of Colorado Boulder   *Boulder, CO*
- Formulated spectral norm probability bounds for (m,p) matrices in high-dimensional spaces.

EDUCATION

Lake Forest College   Lake Forest, IL
B.A. Mathematics, B.A. Economics   *Aug. 2016 – May 2020*

University of Colorado Boulder   Boulder, CO
M.S. Applied Mathematics   *Aug. 2021 – May 2024*

LANGUAGE PROFICIENCY

Bulgarian, **English**, **German** - fluent