

# KASHIF BARI

<https://kashbari.github.io>

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## EXECUTIVE SUMMARY

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PhD trained Research Scientist with modeling experience in Bayesian, Deep Learning, Natural Language Processing, and traditional Machine Learning algorithms as well as a mathematical research background in the Tensor Geometry, Geometric Complexity Theory, and Graph Theory.

## SKILLS

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Python, C++, Git, Hg, R, MATLAB, Linux (Ubuntu, CentOS), Amazon Web Services, Google Cloud Services, Azure, Apache Airflow, PySpark, SQL, HTML, Docker

## WORK EXPERIENCE

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- **Analyst at ORCA Division, Systems Planning and Analysis, Inc** *September 2022 - Present*  
Classified work within ORCA (Operations Research and Cyber Analysis) division. (TS Clearance)  
Worked in the following domains: Bayesian tracking algorithms, Monte Carlo Simulations, Signal Processing, Deep Learning, Data Engineering. Collaborated with Research Scientists, Analysts, and Software Engineers on various contracts.
- **Analyst at ORCA Division, Metron, Inc** *January 2022 - September 2022*  
ORCA Division previously part of Metron; same domains as above
- **Data Science Consultant at Bella Vista Health Center** *June 2021 - November 2021*  
Constructed data pipelines to automate statistical analyses and data visualization.
- **Mathematics Graduate Assistant at Texas A&M University** *August 2015 - May 2021*  
Used Python to experimentally investigate tensor ranks and border ranks in conjunction with ideas from representation theory and algebraic geometry to theoretically confirm conjectures in Complexity Theory. Used Texas A&M High Performance Computing cluster (SLURM manager) to run Python code.  
Leading recitations in Engineering Calculus I and II as well as teaching Python and MATLAB to Engineering students in the context of Calculus; Graded for Introduction to Proofs, Applied Algebra for Math Majors, and Graduate Algebra I and II (Qualifying Exam courses)

## PROJECTS

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- **Erdős Institute Qarik Corporate Project: Learning from World Bank Loan Documents** *Fall 2021*  
Looking for insights into economic and development trends over decades from unstructured dataset. Relevant domain knowledge: Natural Language Processing (NLTK), Optical Character Recognition (Tesseract), Data Engineering, Visualisation (Seaborn), Topic Analysis Clustering (Doc2Vec, LDA)
- **Erdős Institute Mentor Program** *Spring 2022, Fall 2022*  
Mentor groups of PhD students in Data Science Bootcamp. Topics include Computer Vision, Image Classification, Natural Language Processing, and Credit Risk Machine Learning models.

## EDUCATION

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- **Texas A&M University** *August 2015 - May 2021*  
PhD in Mathematics, Dissertation: On the Structure Tensor of  $\mathfrak{sl}_n$
- **San Diego State University** *August 2012 - June 2015*  
M.A. in Mathematics, Thesis: A Commutative Algebraic Approach to Hamiltonians and Graphs
- **University of California, San Diego** *August 2008 - June 2012*  
B.S. in Mathematics, Minor in Music

## PUBLICATIONS

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- K. Bari, *On the Structure Tensor of  $\mathfrak{sl}_n$* , **Linear Algebra and Its Applications**, <https://doi.org/10.1016/j.laa.2022.08.012>
- K. Bari and M. O'Sullivan, *The Hamiltonian problem and t-traceable graphs*, **Involve**, DOI: 10.2140/involve.2017.10-5