Krishna Chebolu

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Education

University of Missouri-Columbia **2024 – Present**
M.S. Applied Mathematics | Concentration in fluid dynamics and computational methods *Columbia, MO, USA*
GPA: 3.91/4.00

Truman State University (TSU) **2020 – 2024**
B.S. Mathematics | Minor in Computer Science *Kirksville, MO, USA*
Cumulative GPA: 3.93/4.00, Major GPA: 4.00/4.00 | Summa Cum Laude

Work Experience

Cart3D Group, NASA Ames Research Center **Summer 2025**
Research Intern, Uncertainty Quantification (UQ) *Mountain View, California, USA*

- Conducted UQ studies of the X-59's acoustic signature under varying atmospheric conditions and aircraft trim states.
- Developed benchmark test cases to validate NASA's UQ tools, providing parameter rankings and sensitivity analyses.
- Executed workflows using Python, Perl, NASA's QUEST, Cart3D, & sBOOM on high-performace compute clusters.

Summer Geometry Initiative, Massachusetts Institute of Technology **Summer 2024**
Geometry Processing Research Fellow *Boston, Massachusetts, USA*

- Performed Topological Data Analysis on OpenAI's CLIP to test robustness. Access Jupyter notebook.
- Gained proficiency in UMAP, Ripser, cosine similarity matrices, and vector space dimensionality reduction.
- Tested Simultaneous Localization and Mapping (SLAM) systems ORB-SLAM and NICER SLAM on Esophagus data.

Bolton Lab, Washington University in St. Louis **Summer 2024**
Research Intern *St. Louis, Missouri, USA*

- Developed Python, R, and Bash scripts to evaluate a genomic analysis pipeline, identifying and eliminating two redundant steps to improve efficiency.
- Analyzed large datasets to assess the accuracy of lab models, systematically identifying correct/incorrect classifications.
- Presented findings to team, explaining discrepancies in model predictions and their underlying causes.

Oklahoma Bombers Financial Operations, The Boeing Company **Summer 2022**
Finance Intern *Oklahoma City, Oklahoma, USA*

- Optimized B1, B2, B52, ALCM, & Multiplatform aircraft initiatives by restructuring data for 60+ spending plans.
- Filled knowledge gaps in 20+ reports and spending plans by seeking out Points of Contact and obtaining explanations, aiding core team.
- Saved 100 hours of company time and decreased the time spent generating spending plan reports.

Phantom Works Estimating Department, The Boeing Company **Summer & Fall 2021**
Finance Data Analysis Intern *St. Louis, Missouri, USA*

- Conducted a comprehensive regression and sensitivity analysis on 18 Cost-Estimating Relationships (CERs).
- Boosted accuracy by over 20% on average by generating 60-70 alternates; 3 CERs had a 50% boost.
- Synthesized and presented findings to management for further research– continued by full-time employees.

Research Experience

Investigating Meteotsunamis Using Bifurcation Theory **Fall 2024 – Present**

- Using tools from Bifurcation Theory and Implicit Function Theorem to investigate ocean phenomena– Meteotsunamis.
- Key topics: Computational fluid dynamics (CFD), partial differential equations, implicit function theorem, water waves.
- Thesis project in progress.

On Nonlinear Time Series Analysis and Climate Variability **Summer & Fall 2023**

- Designed and conducted a self-driven comprehensive study, reviewing over 150 academic papers and articles.
- Topics include Chaos theory, fractals, state-space reconstruction, and delay-coordinate embedding.
- Acquired proficiency in subject-specific terminology, mathematical techniques, case studies, and seminal works.
- Effectively synthesized and distilled key findings, creating a foundational resource to facilitate newcomers into the field.

Human-Animal Relationships in Maasai Mara Game Reserve **Spring 2023**

- Task: Identify alternate ways to manage resources in the Maasai Mara reserve and use math to inform policy changes.
- Built a complex network of human-animal relationships using thirteen variables & six equations.
- Reported 8 policy changes; e.g. for the environment, increasing human settlements is better than letting cattle graze.

Developing a Day-to-Day Trading Strategy **Spring 2022**

- Developed a model to buy/sell assets based on only the asset price with transaction fees.
- Optimized model using other price data sets: Ethereum (1400% value gain w/ model), Pfizer (160%), and Gold (130%).

Seeing Where The Real Buzz Might Be **Spring 2021**

- Task: Determine which reported sightings of murder hornets deserve resources.
- Used Python to filter data using a point system; decides which report in a list most deserves additional resources.
- Model consistently scored positive cases in the top 10 overall rankings and effectively allocated resources.

Teaching Experience

Calculus for Social Sciences at University of Missouri-Columbia 2025 - Present
College Algebra at University of Missouri-Columbia 2024 - 2025
Quantitative Reasoning at Truman State University 2021 - 2023

Skills

Technical: Python, C++, MATLAB, R, Java, LaTeX, Bash/Shell scripting, MS Excel
Scientific Computing: High-Performance Computing, Job scheduling, numerical simulation, computational fluid dynamics (CFD), uncertainty quantification, optimization
Tools & Platforms: Git/GitHub, BitBucket, Docker, DockerHub, React Native, Jira, QUEST, Linux/Unix environments

Leadership & Service

Phi Beta Kappa: Inductee 2024 - Present
American Mathematical Society: Sponsored Member 2023 - Present
South Asian Student Union: Founding President and Treasurer 2023 - 2024
Student Government: Voting Senator, Environmental Affairs 2020 - 2022
Namaste Nepal: Coordinator 2021 - 2023
African Student Association: PR Chair and Webmaster 2021 - 2023

Publications

2025 Control Surface Deflection Uncertainty Quantification for Low-Boom Acoustic Signatures Poster
2023 On Nonlinear Time Series Analysis and Climate Variability — Access paper Literature Review

Projects

SurfNote **Spring 2024**

- Built a Google Chrome extension for note-taking while surfing on the web. Available on the webstore.

WorldNews, An Immersive Map-Based News Application **Fall 2023**

- Designed and built a web application to obtain top worldwide news as custom markers on a map.
- Integrated Google Maps API, Google Street View API, and Aylien News API into a .Net framework.

Selected Talks & Presentations

2025 Uncertainty Quantification of X-59's Acoustic Signature due to Atm. Conditions, *Aeronautics Talks, NASA ARC*
Control Surface Deflection Uncertainty Quantification for Low-Boom Acoustic Signatures, *NASA ARC*
2024 Efficacy of the BCBIO Filter in ArCH Pipeline, *Bolton Lab, Washington University in St. Louis*
Foundations of Nonlinear Time Series Analysis, *American Mathematical Society Spring, U of Wisconsin-Milwaukee*
2023 On Nonlinear Time Series Analysis & Climate Variability, *Mathematics Capstone Seminar, TSU*
Human-Animal Relationships in Maasai Mara Game Reserve, *Student Research Conference, TSU*
2022 Tea Time with Sue: Krishna Chebolu, Episode 4, *University talk show with university president Dr. Susan Thomas*
Developing a Bitcoin and Gold Portfolio Manager, *Student Research Conference, TSU*
2021 Seeing Where the Real Buzz Is, *Student Research Conference, TSU*

Selected Awards & Honors

2025 Andrew McFarland Scholarship, University of Missouri-Columbia
2024 Symposium on Geometry Processing Travel Grant, Massachusetts Institute of Technology
Graduation Speaker for the Center for Diversity & Inclusion, TSU
2023 Bulldog B.I.T.E. Business Pitch Competition 2nd Place Winner, TSU
Outstanding Residence Leadership for Exceptional Service to the University Community, TSU
Top Presenter, University of Northern Iowa
2022 The Boeing Scholarship for Mathematics, Statistics, and Computer Science, TSU
2021 The Boeing Scholarship for Mathematics and Computer Science, TSU
Dr. Susan LaGrassa Scholarship for Mathematics, TSU
2020 President's Honorary Scholarship for Full Tuition, TSU

Recurring

2020 - 2024 President's List for Academic Excellence, TSU
2021 - 2023 Successful Participation in the Consortium for Mathematics and its Applications