Chase Mathis

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Faculty Reference: David Banks (dlbanks@duke.edu)

Education

- **Duke University** — Durham, NC
  B.Sc in Statistics & Computer Science, Minor in Math; GPA: 3.86 — *August 2021 - May 2025*
  - **Courses**
    Data Structures and Algorithms, Statistical Machine Learning, Modern Bayesian, Computer Vision
- **St. Catherine's College Oxford** — Oxford, UK
  Visiting Student for the Michaelmas (Fall) Term — *Fall 2023*
  - **Courses**
    Graphical Statistics & Statistical Genetics
- **Deerfield Academy** — Deerfield, MA
  Cum Laude Inductee — *September 2017 - May 2021*

Research

- **Summer Institute in Biomedical Informatics** — Harvard Medical School, DBMI
  Research Assistant in the CELEHS Lab — *Summer 2023*
  - Performed comprehensive research on the integration of joint embedding models (CLIP) to augment established statistical models.
  - Extensively used PyTorch for creating and fine-tuning vision and text transformer models.
  - Trained a Vision Encoder to perform radiology report generation and phenotyping.
  - Developed a radiology report LLM that outperforms LLM's on chest x-ray classifications such as MedFlamingo.
- **InSpire Lab** — Duke University
  Research Assistant — *Fall 2022 - Present*
  - Lead quantitative analysis analyzing perceptions of various period tracking apps after Roe Vs. Wade. (Submitted to CHI 2024).
  - Currently engaged in a survey paper to examine user attitudes towards decentralized social networks, specifically focusing on platforms like Mastodon.
- **Investigating Controllable Factors of Life Expectancy** — Duke University
  Data Mining & Machine Learning Final Project — *Fall 2022*
  - Achieved strong predictions with Lasso Regression (MSE: 5.91), Decision Tree (MSE: 5.15), and Generalized Additive Model (MSE: 4.84).
  - Demonstrated proficiency in selecting and implementing effective modeling techniques for robust life expectancy predictions and inference.
- **Google CS Research Mentorship** — Virtual
  Mentorship — *Spring 2023*
  - Acquired key skills for a focused research path in CS, including identifying opportunities, formulating questions, conducting literature reviews, and developing methodologies.

Work Experience

- **Duke Field Hockey** — Duke University
  Data Analyst — *Fall 2022 - Present*
  - Collect, clean, and visualize unstructured game data in R/Python with NLP methods.
  - Created and continue to upkeep a website that allows the team to privately access data reports.
  - Create reports that highlight the team's strengths, which are sent to the team, coaches, and boosters.
- **Teaching Assistant** — Duke University
  Courses — *Fall 2022 - Spring 2023*
  - STA 199: Introduction to Data Science

Skills Summary

- **Languages:** Python, R, SQL, Java, C, Proficient in Mandarin
- **Libraries/Tools:** NumPy, PyTorch/TensorFlow, Pandas, Stan, Transformer Models, AWS (S3, EC2), Git