

# Tristan Sones-Dykes

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## EDUCATION

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### University of St Andrews

Sept 2021 - June 2025

*MMath Mathematics*

- Focused my studies on Statistics, Theoretical Computer Science, and Pure Mathematics
- Advanced Bayesian Inference (92%), Applied ML (85%), Computing in Statistics (85%)

### Cornwall School of Maths and Science

Sept 2019 - June 2021

*A\*A\*A\*A in Further Mathematics, Mathematics, Computer Science, and Physics; 34 ACT*

## EXPERIENCE

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### Air Software Engineer Intern | BAE Systems

June 2024 - Sept 2024

- Designed and implemented a data-intensive C++ module within a distributed system
- Implemented a stable ABI to ensure cross-platform capability and live updates; extensible to the needs of multiple customers
- Reduced query time by 30% and memory usage by 20% of a spacial data manager using QuadTrees in Python
- Debugged a critical CMake build pipeline added two weeks before a release, fixing unit tests

### Research Intern | University of Edinburgh - Wellcome Trust

June 2023 - Aug 2023

- Created an automated proteome analysis pipeline using Bash, Python, and R
- Integrated a paper's methods with Gaussian mixture models, model validation, and web scraping
- Extended analysis across 11 fungal species using Docker
- Continued working with my supervisor over the next year yielding results, manuscript in preparation

### Research Intern | University of Edinburgh - EastBio

June 2022 - Aug 2022

- Conducted a meta-analysis on the effects of DNA methylating treatments on renal cancer cells using R
- Annotated and aggregated large high-throughput sequencing datasets from various studies
- Used hierarchical clustering to investigate the groupings of genes affected by the treatment and multi-way ANOVA to investigate the effects of various experiment factors

### Spring Intern | BlackRock

April 2023

- Engaged in an immersive learning experience, covering asset management and Aladdin

### Undergraduate Research Assistant | University of St Andrews

Sept 2021 - May 2023

- Developed an agent-based evolution simulation in Unity (C#)
- Increased the number of agents being simulated by a factor of 100 using compute shaders
- Used R to investigate how altruism evolves under a variety of different simulation conditions
- Vastly improved the data logging system to increase the amount of analyses possible

## PROJECTS

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### OpexFlexure Blockly | JavaScript, HTML/CSS, Python

- Collaborated on the *OpenFlexure Microscope* project at the University of Bath
- Created a visual coding interface using Google Blockly that generates Python control scripts; used JavaScript to create Python generators for custom library functions

### Water Requirement Predictor | Python

- Developed a global plant water requirements predictor using data from *Dark Sky API*
- Modelled evapotranspiration rate using ARIMA time-series modelling, allowing location and crop-type inputs

## TECHNICAL SKILLS

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**Languages:** Python, R, C++, C#

**Tools & Libraries:** Git, Docker, NumPy, pandas, statsmodels, Tidyverse, Tidymodels, Bioconductor