

TANMAY KUCHHAL

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EDUCATION

The Doon School, Dehradun, India 2017-2023
International Baccalaureate Diploma; Topper in History HL, Grade 11
School Chess Captain, Executive Member of Business Club, President of Mind Club

University of Washington, Seattle 2023 – Present
B.S. Informatics & Economics (Rising Senior, Class of 2027)
Relevant Courses: Machine Learning (CSE/STAT 416), Responsible Data Science (INFO 370), Database & Data Modeling (INFO 330), Elements of Statistical Methods, Numerical Programming (AMATH 301)

SKILLS

Languages & Tools: Python, R, SQL, Git/GitHub, LaTeX, React, FastAPI

ML & Data: Regression modeling, gradient boosting, statistical inference, LLM evaluation, deep learning workflows, ggplot2, data cleaning & QC, large dataset aggregation

Methods: Chi-squared tests, RMSE, Adjusted R^2 , feature engineering, version control, metadata documentation, reproducible pipelines

RESEARCH EXPERIENCE

Undergraduate Researcher, Information School | University of Washington - Prof. Ott Toomet Apr 2026 – Present

- Built Python evaluation pipelines to benchmark prompting strategies (Chain-of-Verification, few-shot, zero-shot) across 3 open-source LLMs on contextual QA datasets; tracked 10+ performance metrics across experimental conditions.
- Aggregated and QC'd evaluation datasets spanning thousands of model outputs; enforced reproducibility through modular pipeline design and systematic version control.
- Documented model comparison methodology and QC procedures; results contributed to ongoing iSchool research on LLM reliability.

Research Member, LeanCoT, UW Math AI Lab — Evan Wang Jun 2026 – Present

- Collaborating on LeanCoT, a neuro-symbolic framework that formalizes LLM Chain-of-Thought reasoning in Lean 4 to detect logical errors beyond what First-Order Logic solvers (e.g., Z3) can catch.
- Building a constrained Domain-Specific Language (DSL) in Lean 4 to map natural language CoT steps to formally verifiable proof states; semantic errors surface as direct feedback signals to correct LLM reasoning traces.
- Addresses limitations of prior frameworks (Explanation-Refiner, VeriCoT): handles state changes, recursion, transitive closure, and higher-order quantification that FOL cannot express.

PROJECTS

Predicting Fastest Lap Times in Formula 1 — R · Regression Analysis Oct 2024

- Acquired, cleaned, and engineered features from multi-season F1 datasets; handled missing values and outliers across 5+ years of race data.
- Built and compared Linear Regression, Interaction Effects, and Gradient Boosting models; Gradient Boosting achieved lowest RMSE with Adjusted R^2 of ~ 0.82 ; visualized results with ggplot2.

ADDITIONAL EXPERIENCE

Research Intern — Sacred Groves Jul – Aug 2024

- Integrated geospatial and environmental datasets to monitor sustainable development projects across 4+ sites; contributed to a data platform serving field teams and external partners.
- Collaborated cross-functionally to structure raw environmental data into actionable reporting dashboards.

PUBLICATIONS

Peer-Reviewed Paper: "Geopolitical Factors Affecting Trade between South Asian Countries" — Journal of Social Science and Economic Research. Applied chi-squared tests on OECD trade datasets to quantify impact of bilateral geopolitical decisions on trade flows.

Book: Ancient Wisdom for New-Age Entrepreneurs (Notion Press). Featured in Writing Geeks Magazine's 'Top 10 Books'; 200+ copies sold across Amazon and Flipkart.