Diane Tc

dianetc@mit.edu
Personal Website

Research Experience

- **Massachusetts Institute of Technology – ORC** — Cambridge, MA
  Advisor(s): Dr. Omar Khattab & Dr. Devavrat Shah — *Sep 2025 – Present*
  - **Theory and Application of NLP Systems**: Research on developing and formalizing systems that can better process natural language at scale.
  - **Content Moderation**: Previously developed novel techniques for the purposes of robust and efficient content moderation under imperfect human reviewers with Dr. Thodoris Lykouris, (*Aug. 2023 - May 2025*).
- **University of Maryland – Mathematics Department** — College Park, MD
  Research Assistant under Dr. Adam Kanigowski — *Aug 2021 – Jul 2022*
- **Microsoft – Quantum Architecture & Computing** — Redmond, WA
  Research Intern under Dr. Brad Lackey — *Mqy 2019 – Aug 2019*

Work Experience

- **Independent** — Remote
  Software Engineering (Part-time/Contract) — *Aug 2021 – Aug 2023*
  - **Hypothesis Testing**: Integrated property based testing into the *Sympy* library and implemented hypothesis test into the polynomial and number theory library. Fixed bugs and enhanced features on a novel data model that is a super–set of the standard relational and document models.
  - **Uncertainty Quantification**: Identified regions of uncertainty and anomalies in complex and dynamic medical datasets using a proprietary data–oriented probabilistic ML platform.
  - **Error Reduction**: Devised methodology to properly back–fill geographical data in Elasticsearch database to reduce the rate of information retrieval error on the user side from 5% to $\ll 0.5\%$. Created illuminating data dashboards to properly track and analyze user movement, behavior, and retention via sql queries in metabase.
- **Envieta Systems** — Columbia, MD
  Mathematician — *Jan 2021 – Jul 2021*
  - **Computer Vision**: Utilized Detectron2 for instance segmentation, and developed classification tools for robotic package sorting.
  - **Quantum Arithmetic**: Developed novel algorithms in the field of quantum arithmetic.
- **Apogee Research** — Arlington, VA
  Research Engineer — *Jan 2020 – Dec 2020*
  - **Control Theory**: Applied stochastic control theory to object tracking & estimation and robust statistical methods to outlier detection and pattern discovery in noisy data.
  - **Modeling**: Constructed testing models, visualizations, and prototypes primarily in MATLAB, and (to a lesser extent) JAVA and Python

Skills/Assets

- **Programming Languages**: Python, GO, Zig
- **OSS Contributions**: Sympy, Zed
- **Personal Projects**: Zigthesis

Education

- **Massachusetts Institute of Technology** — Cambridge, MA
  PhD Student, Operations Research — *Sep 2023 – Present*
- **University of Maryland** — College Park, MD
  BS, Mathematics & Economics — *Aug 2015 – Dec 2019*