

# Diane Tc

✉ dianetc@mit.edu

👤 Personal Website

## RESEARCH EXPERIENCE

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- **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* Mgy 2019 – Aug 2019

## WORK EXPERIENCE

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- **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.
  - **Super-structured Data:** 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  $\ll 0.5\%$ .
  - **Visualizations:** 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

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

## EDUCATION

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- **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