Ada Tsan Qin

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EDUCATIONAL BACKGROUND

Wesleyan University Middletown, CT

Major: **Computer Science, CIS (College of Integrative Sciences)** | GPA: 3.78/4.00

09/2022—06/2026

Core Courses: Automata Theory& Formal Languages, Logic and Functional Program Languages, Software Engineering, Abstract Algebra, Differential Equations, Discrete Mathematics

Language: python, c/c++, sml, PHP, JavaScript, HTML

SUMMER RESEARCH & ACADEMIC PROJECTS

Quaternion and Gimbal Lock 06/2025—08/2025

Summer Research supervised by Prof. Ilesanmi Adeboye, funded by College of integrative Science (CIS)

- Investigated quaternion algebra as a tool for avoiding gimbal lock in 3D rotation systems, with a focus on mathematical formulation and computational modeling.
- Studied the Cayley-Dickson construction and formally proved algebraic lemmas related to its extension properties, including norm preservation, associativity, and alternativity.
- Built a Python-based 3D rotation model to compare quaternion and Euler angle representations, demonstrating quaternion stability in avoiding gimbal lock.
- Presented findings at the CIS Summer Research Symposium via poster session and an optional oral presentation.
- Planned to expand the work on investigating octonions and their applications in controlling mechanical arms.

WesDash App | COMP333 Software Engineering

01/2025—05/2025

Languages: PHP, JavaScript, HTML (https://github.com/AdaTsanQin/COMP333)

- Collaborated in a three-person team to develop a mobile-friendly prototype for a campus delivery app that allowed students to request and fulfill deliveries of food and items across campus.
- Took initiative to coordinate team workflow, organize regular meetings, and ensure timely progress on development milestones.
- Built interactive mobile UI components using JavaScript and HTML/CSS; implemented backend APIs in PHP for user authentication, order management, and data storage with MySQL.
- Managed GitHub repository structure, standardized file naming conventions, and resolved merge conflicts to maintain a clean codebase.
- Authored deployment documentation and supported team communication to troubleshoot blockers and align technical implementation with project goals.

SML-Based Logic Calculators

Spring 2025

Course Projects of COMP325 Logic and Functional Programming Languages

- Developed three calculators in Standard ML to model formal logic and programming systems:
- LK Proof System Calculator for sequent calculus derivations
- Lambda Calculus Calculator with substitution and reduction features
- Type Inference Calculator incorporating a unification algorithm for polymorphic types

Turing Machine: Natural Number Sequence Generator

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Fall 2024

Course Project of COMP301: Automata Theory and Formal Languages

- Utilized simplified epsilon functions to understand the operational mechanisms of Turing machines, and implemented corresponding programs in the specified online platform format.

TEACHING EXPERIENCE

Teaching Assistant for **MATH 123F Mathematical Deduction with Calculus**

Fall 2025

- Led weekly tutoring sessions and provided one-on-one academic support to students
- Graded assignments and compiled common student questions to assist faculty in refining course instruction

Volunteer Math and PE teacher, **Yao Shang Central Primary School**, China Hebei

06/2024—07/2024

- Volunteered as a math and PE teacher for fourth and fifth grades of an elementary school, independently developing syllabi for topics of binary, prisoner's dilemma, topology theory, etc.