Zeki Gurbuz (Gürbüz)

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EDUCATION

UNIVERSITY OF TEXAS AT AUSTIN

BS, COMPUTER SCIENCE HONORS, TURING SCHOLARS PROGRAM BS, MATHEMATICS Projected: May 2025 | Austin, TX GPA: 3.8844 / 4.0

SELECTED COURSEWORK

(* = Honors, ** = Graduate) Operating Systems ' Algorithms & Complexity Theory * Cryptography ** Lattices and Pairings ** Randomized Algorithms Programming Languages * Computer Architecture * Data Structures * Discrete Mathematics * Algebraic Structures I, II ** Topology I, II Linear Algebra * Number Theory Probability Stochastic Processes Multivariable Calculus Quantum Computing I, II Competitive Programming

SELECTED AWARDS

UT ICPC Regionals Team USACO Platinum - Top ~5% US AIME Qualifier 2021 - 120/150 AMC 12 2300+ Rated LeetCode - Top <1% UIL CS Individual 2021 - 1st Place TX UIL CS Team 2021 - 1st Place TX UT Dallas BoTB 2021 - 1st Place TX HP CodeWars 2020, 2021 - 1st Place US Atlassian CTF 2022 - 3rd Place

ACTIVITIES & ORGS

Created numerous algorithmic and mathematics-based coding puzzles Helped to organize biweekly ICPC-style competitions frequently garnering >100 contestants across the US

Provided in-depth solution presentations

DIRECTED READING PROGRAM

Studied algebraic topology and algebraic geometry under the supervision of PhD students.

Presented material for other student and mentor pairs at DRP symposiums; slides

DENT CYBERSECURITY

Competed in numerous US-wide "capture the flag" style competitions Solved various cryptography and reverse engineering challenges 55th out of 17,875 US teams in 2020 **EXPERIENCE**

JANE STREET | SOFTWARE ENGINEERING INTERN May 2024 - August 2024 | New York City, NY

UNIVERSITY OF TEXAS AT AUSTIN | UNDERGRADUATE RESEARCHER

August 2023 - Present | Austin, TX

• Working with Dr. David Wu on private information retrieval

VIRTU FINANCIAL | SOFTWARE ENGINEERING INTERN Atlas Development Team

May 2023 - August 2023 | New York City, NY

- Designed and implemented a tool for tracking price improvement for retail order flow
- Automated the process of creating and updating intraday price improvement rules algorithmically in Java
- Graphically represented effective over quoted (EQ) and price improvement data using Python, showing massive improvement in EQ consistency

UNIVERSITY OF TEXAS AT AUSTIN | TEACHING ASSISTANT

Competitive Programming January 2023 - May 2023 | Austin, TX

- - TA for CS104C (Competitive Programming) for Dr. Glenn Downing & Dr. Etienne Vouga
 - Held office hours, helped to lead discussions, graded assignments

UNIVERSITY OF TEXAS AT AUSTIN | TEACHING ASSISTANT Discrete Mathematics Honors August 2022 - December 2022, August 2023 - December 2023 | Austin, TX

- TA for CS311H (Discrete Mathematics, Turing Scholars Honors) under Dr. Isil Dillig
- Held office hours, helped to lead discussions, graded problem sets, proctored exams

FOREFLIGHT | SOFTWARE ENGINEERING INTERN iOS Mobile Application Development in Swift May 2022 - August 2022 | Houston, TX

- Coded in Swift using the SwiftUI framework and PencilKit to implement an entirely new flight plan signing feature for FDPx+, allowing pilots to sign off on an OFP before takeoff
- Implemented key features of FDPDesignKit for the FDPx+ team, consolidating UI components into an easily modifiable and interactive library for developers
- Drastically reduced the amount of time needed to draft UI features by maintaining a very concise dependency graph (allowing the efficient use of Xcode previews), and increasing guarantees of conformance to spec by breaking down UI to the "atomic level"
- Learned about the MVVM pattern, dependency injection, and Objective-C networking

PROJECTS

CO-ROUTINES

- Designed and implemented co-routines in C as a pseudo-native language feature
- Utilized x86 Assembly, C, and in-line x86 Assembly to achieve desired behavior

AUTOMATED TRADING BOT

- Created a Python bot for Jane Street's etc trading competition during the FTTP event
- Employed strategies such as pennying and arbitrage on a variety of securities to make
- money with low risk exposure in comparison to standard directional investing
 Interacted with numerous other bots as well as non-playing directional traders
- GAME BOY ADVANCE EMULATOR
 - Used C++ and ARM7TDMI Assembly to create an emulator and vast testing suite
 - Worked on the implementation of bitmap graphics and instruction emulation

MALLOC AND FREE

- Redesigned and implemented C's "malloc" and "free" in C without additional memory
- Used the first-fit algorithm and a doubly linked list for constant-time node merges/splits

PIPELINED PROCESSOR

- Used the HDL Verilog to create an efficient pipelined AArch64 processor
- Supported a reduced instruction set with large speedups over a standard design