

# Nils Collins

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## EDUCATION

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**The University of Texas at Austin**, Austin, TX December 2023  
*Bachelor of Science, Computer Science, Mathematics (double major)*

**International Baccalaureate Diploma** Awarded July 2020

**Deutsche Sprachdiplom C1+ Native German proficiency** Awarded May 2020

## EXPERIENCE

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**Research under Professor Kia Teymourian** December 2022- Present  
*Undergraduate Researcher*

- Working on a Code Assist program for professors to provide more feedback to students on submissions, mimicking an improved version of Gradescope
- A full stack application using Docker, PostgreSQL, Javascript

**Lookout**, San Francisco, Ca May 2022 - August 2022  
*Software Engineering Intern on SASE control team*

- Created a debugging tool to deregister tenants via **redis** using **AWS SQS** with added print functionality regardless of encoded form i.e. **Avro/JSON/EXI**
- Created a **Sonarqube** server for the Edge Controller to report code coverage and code smells. Added several testcases to improve code coverage.

**Zeta Tau Alpha**, Austin, Tx August 2021 - Present  
*Event Staff*

- Prepare food and meals
- Organize weekly dinners
- Perform routine maintenance of house and grounds as needed

**Trend Micro**, Austin, Tx June 2021 - August 2021  
*Research and Development Intern*

- Aided in the development of support for a Network Security Virtual Appliance (**NSVA**), specifically an Intrusion Prevention System (**IPS**) on **Google Cloud Platform**.
- The project was implemented and tested between **two traffic servers** to determine its functionality and thus minimizes threat and saves the network from any cyber-attacks and ransoms.

## PROJECTS

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### Multimodal iPhone sensor detection using Machine Learning

- Multimodal sensor measures recorded from a user's phone in order to determine their mode of transportation.
- Several models were tested, including **decision trees**, **GaussianNB**, **random forest classifiers**, **support vector machines (SVMs)**, **logistic regression**, and **K-nearest neighbors classifiers**. Used a **grid-search cross-validation** loop to select hyperparameters. Feature Engineering included: **PCA**, **RFE**, **SMOTE**, **random sampling**

### Pintos

- Enhanced existing OS to incorporate **priority scheduling**, allow **argument passing** on the stack, implemented **system calls** for user programs and added **virtual memory**.
- Converted the existing single-thread file system into an **multi-threaded, multi-level indexed file system**.

### Pizza ordering IOS app

- Created an app using Swift (UIKit) that presented a table view of pizzas that the user created.
- Used Firebase to create individual accounts as well as CoreData, popup alerts, segmented controls.
- Other experience in IOS includes: SwiftUI, calendar, camera, location, motion, multithreading, gestures

## LEADERSHIP

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**Beta Theta Pi**, Austin, Tx November 2021 - Present  
*VP of Programming*

- Schedule and organize all chapter social activities as well as enforce risk management policies at said events
- Serve as a member of the executive board, providing input on chapter-wide issues

## SKILLS

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**Technologies:** Java, C/C++, Python, PyTorch, NumPy, Golang, Swift, Spring, RestFul, Docker, AWS, GCP, Linux, GDB, Kubernetes, Colab, Jupyter, Redis, Avro, JSON, EXI, RabbitMQ, Scikit learn, Scipy