

# Abdullah Ghani

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## EDUCATION

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### Lahore University of Management Sciences

*B.Sc. in Computer Science;*

Sep 2021 – Present

*CGPA: 4.00/4.00;*

### Lahore Grammar School Defence

*A Level, Cambridge International Examinations;*

Sep 2019 – Aug 2021

*Grades: 5 A\*s;*

## SKILLS

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**Languages:** C/C++, Python, Haskell, Go, JavaScript, TypeScript, SQL, Bash, MATLAB, HTML/CSS

**Tools and Frameworks:** React, Node.js, Selenium, Pandas, NumPy, TensorFlow, PyTorch, Git, Docker

## RESEARCH EXPERIENCE

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### Internet, Data, and Society Lab @ LUMS

Lahore, Pakistan

*Research Assistant – LLMs as Fact-Checkers under Dr. Ihsan Ayyub Qazi*

- Assessed the effectiveness of LLMs as fact-checkers on real-world claims from Google Fact Check Tools, mapping and validating 200,000+ responses using comprehensive criteria and codebooks.
- Proposed new metrics to capture LLM utility and performance, addressing non-standard 2x3 contingency table challenges through extensive literature review.
- Hypothesized and analyzed patterns indicating the Dunning-Kruger effect: smaller LLMs were overconfident but less accurate, while larger models were more accurate with lower confidence.
- Developed an end-to-end pipeline to classify claims by Global North and South using claim content and metadata, revealing performance disparities and inclusivity challenges in LLM fact-checking capabilities.
- Identified and applied appropriate statistical methods for robust validation of nominal, non-binary, and paired/unpaired data to validate our findings.
- Managed GFC and LLM APIs at a large scale, analyzing natural language data and employing methodical, data-driven approaches for comprehensive insights.
- Research findings to be submitted to the *Science* Journal.

### Breakerspace Lab @ UC Davis

Remote

*Uncovering Meta Pixel under Dr. Zubair Shafiq*

- Designed and employed comprehensive crawlers to analyze Tranco's top 10k websites longitudinally backward via Wayback Machine, tracing Meta Pixel presence and configuration changes over 5 years.
- Reverse-engineered Meta Pixel's obfuscated JavaScript configuration files, using differential analysis and network traffic monitoring to understand tracking behaviors.
- Built a custom parser integrated with code-diff tools to efficiently decompose and analyze pixel configuration changes over time.
- Designed a publically available tool that maps and displays websites' historical tracking practices, facilitating the evaluation of privacy risks associated with Meta Pixel usage.

### Coordinated Science Laboratory @ UIUC

Remote

*Decoding User Concerns in AI Health Chatbots under Muhammad Hassan (Ph.D. student at UIUC)*

- Conducted a comprehensive study on user concerns in popular health chatbot applications, scraping over 50,000 user reviews for analysis as part of a course project.
- Leveraged Natural Language Processing (NLP) techniques and large language models (LLMs) to analyze user sentiments and detect privacy-intrusive concerns in them.
- Uncovered novel privacy risks in health chatbots through a combination of automated and qualitative analyses, proposing a scalable framework for addressing privacy concerns in future applications.
- Highlighted actionable insights for improving user privacy and data security in AI-driven health applications.

## PUBLICATIONS

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- **Decoding User Concerns in AI Health Chatbots: An Exploration of Security and Privacy in App Reviews:** Muhammad Hassan, **Abdullah Ghani**, Muhammad Fareed Zaffar, Masooda Bashir  
(Submitted to Symposium on Usable Security and Privacy (USEC) 2025)

## SELECTED PROJECTS

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- **Succession Planning Software** — Designed a robust, automated, and impartial Succession Planning Software System using MERN Stack that tracks and analyzes employee performance, utilizing sophisticated machine-learning algorithms from TensorFlow to identify and nurture candidates for future leadership positions based on merit.
- **Distributed, Fault-Tolerant Key-Value Store** — Created a distributed key-value data store that is able to reach consensus through Raft, which I also implemented myself - it currently supports both Leader Elections and Log Replication with persistence.
- **User-Level Threading Library** — Created a fairly abstracted threading library in C that, although utilized registers for storing PCBs, did application-level context switching (I used the setjmp library to achieve this).
- **PakStay Advisor** — Created a predictive model using random forest and logistic regression algorithms using scraped hotel data in Pakistan to evaluate hotel offers, providing actionable insights for both international travelers seeking reliable accommodations and hotel managers aiming to maximize profitability.

## TEACHING EXPERIENCE

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### CS 334: Data Science

Fall 2024

*Teaching Assistant*

*Dr. Ihsan Ayyub Qazi*

- Supervised semester-long data science projects, guiding students in research and applications of data analysis techniques.
- Managed course's Slack channel, created/reviewed/managed/invigilated programming assignments and quizzes.
- Held weekly office hours, evaluated student projects, created detailed assignment manuals, and offered semi-formal counseling for 150+ students.

### CS 202: Data Structures

Spring 2024

*Teaching Assistant*

*Dr. Ihsan Ayyub Qazi*

- Managed course's Slack channel, created/reviewed/managed/invigilated programming assignments and quizzes
- Held weekly office hours, made detailed assignment manuals, and engaged in semi-formal student counseling for a class of 100+ students.

### CS 210: Discrete Mathematics

Fall 2023

*Teaching Assistant*

*Dr. Malik Jahan*

- Held weekly office hours, graded assignments and quizzes, and engaged in semi-formal student counseling for a class of 100+ students.

## GRADUATE COURSEWORK

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**CS 370 (Operating Systems): A+**

**CS 582 (Distributed Systems): A**

**CS 473 (Network Security): A**

**CS 535 (Machine Learning): A**

**CS 6303 (Topics in Large Language Models): A+**

**CS 682 (Topics in Computer and Network Security): A**

## AWARDS & ACHIEVEMENTS

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**Top Candidate at School (A Level):** Scored the highest grades at Lahore Grammar School Defence.

**Full Merit Scholarship Award:** Awarded every year to the **top 3 students** from LUMS SBASSE Batch of 2025 (260+ students) for the 2022-2023, 2023-2024, and 2024-2025 academic years.

**Dean's Honor List:** Awarded for the **2021-2022, 2022-2023, and 2023-2024** academic years.

**Ranking:** Placed in the **top 1%** students at LUMS SBASSE program (260+ students).

**Top 20 National Mathematics Talent Content:** Shortlisted till the final round to represent Pakistan at the International Mathematic Olympiad (**IMO**) from students across Pakistan.