

# Muhammad Shayan Shamsi

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## RESEARCH INTERESTS

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Artificial Intelligence; Machine Learning; Natural Language Processing; Large Language Models; Differential Privacy; Adversarial Machine Learning and Robustness; Mechanistic Interpretability; AI Alignment

## RESEARCH EXPERIENCE

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### Fellow

#### Fatima Fellowship

September 2024 - Present

- Topic of Research: "Vision Model Interpretability"
- Working on different methods to make the results of vision models more interpretable
- Investigating applications of interpretable vision models in medical settings

### Summer Research Intern

#### CISPA Helmholtz Center for Information Security

June 2024 - August 2024

- Topic of Research: "Privacy Preserving Text Generation with Large Language Models"
- Researching privacy in large language models under differential privacy
- Analyzing several pre-training/fine-tuning methods and model behavior on various downstream tasks
- Investigating interpretability of differentially private fine-tuning of LLMs

## NON-RESEARCH EXPERIENCE

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### Web Developer

#### Scandiweb

April 2023 - June 2023

- Worked with AWS EC2, EBS, and S3 to host and develop e-commerce websites.
- Successfully migrated Non-AWS e-commerce applications to AWS infrastructure.
- Gained hands-on experience with over 50 AWS services during the training period.
- Built backends of e-commerce stores on the Magento framework.
- Built frontends on an internal React-based framework.

## EDUCATION

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August 2021 - Present BSc. Computer Science **Institute of Business Administration**

GPA: 3.69/4.00 Karachi, Pakistan

- Took courses in programming including object-oriented programming, data structures, computer architecture and assembly language, operating systems, and parallel and distributed computing.
- Teacher's Assistant: Introduction to Artificial Intelligence (Spring 2024), Data Structures (Fall 2024), Parallel and Distributed Computing (Spring 2025)
- Participated in the UGRAD semester exchange program to the USA (Saint Martin's University) in Fall 2023.