

# Zain Sarwar

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## RESEARCH INTERESTS

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Adversarial Machine Learning, NLP & Computer Vision

## EDUCATION

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### Lahore University Of Management Sciences

Sept. 2016 – May 2020

*Bsc Economics, Minor : Computer Science*

CGPA : 3.75/4

Relevant coursework

- Deep Learning, Machine Learning, Computer Vision, Data Structures, Cognition, Data Mining, Object Oriented Programming, Econometrics, Advanced Game Theory, Statistics and Applied Probability

## EXPERIENCE

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### Research Assistant

June 2020 – Present

*Lahore University Of Management Sciences*

*Project on deepfake text detection*

- Working with Professor Mobin Javed and Professor Bimal Viswanath at the intersection of deep learning and security
- Implemented several Transformer models in PyTorch & Tensorflow for experimental replication
- Discovered vulnerabilities in existing techniques to detect deepfake text with an extensive literature review
- Handled data collection via authorized APIs and training of Transformer models
- Handled extensive qualitative evaluation of machine generated text to prevent neural text degeneration
- Designed and implemented attacks that broke all existing defenses against deepfake text
- Designing robust defenses by using language models to create unsupervised knowledge graphs that detect factual and semantic inconsistencies in deepfake text
- Paper to be submitted at USENIX Security '21
- Mentoring an undergraduate student in Professor Viswanath's lab in machine learning research

### Search Engine Optimization Analyst

March 2020 – June 2020

*PosterMyWall*

- Revamped the SEO strategy by shifting from manual to automatic link building
- Fixed critical site issues which decreased website bounce rate and significantly improved Click-Through Rate
- Laid down long term plan to adapt to search engines shifting towards using machine learning based algorithms

### Research Assistant

June 2018 – Sept 2018

*Lahore University Of Management Sciences*

*Project on mobilising women voters*

- Recorded and analyzed data from an election campaign aimed at informing women voters about the public service delivery performance of the incumbent politician in a rural constituency in the General Elections of 2018

## AWARDS & HONORS

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- Graduated with distinction
- Dean's Honor Roll from 2017-2020
- Academic Scholarship in A-levels

## PROJECTS

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### Senior Year Project

- Ran a randomized control trial in 12 classes for two semesters at LUMS to analyze the impact of cellphone usage on learning outcomes of students
- Designed data collection procedures, coordinated with faculty and volunteers for classroom observation
- Analyzed the data using OLS regression, Logistic regression & Analysis Of Variance

## TECHNICAL SKILLS

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**Languages:** Python, C, C++, R, Matlab, GNU Octave, Stata, SQL, Visual Basic

**Developer Tools:** Git, Docker, Google Cloud Platform, Visual Studio, PyCharm

**Libraries:** PyTorch, TensorFlow, Trax, OpenCV, Keras, scikit-learn, pandas, NumPy, NLTK, Matplotlib