

Curriculum Vitae

Dr Muhammad Muneeb (PhD Candidate)

Contact Information

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Location: Brisbane, Queensland, Australia

Professional Profiles

[Google Scholar](#) — [ResearchGate](#) — [GitHub](#)

RESEARCH INTERESTS

Computational Biology, Bioinformatics, Genomics, Genotype-Phenotype Prediction, Machine Learning in Healthcare, Polygenic Risk Scores, Deep Learning for Genomics, Systematic Literature Review Automation, Natural Language Processing for Biomedical Text

ACADEMIC QUALIFICATIONS

*1-April-2023—
present*

Degree: Doctor of Philosophy (PhD) in Computational Biology

Where: The University of Queensland, Brisbane, Australia

GPA: Research-based

Thesis: Computational approaches for genotype-phenotype association

Supervisors: Dr. David Ascher, Dr. YooChan Myung

Expected Completion: 2026

*25-August-2019—
2021*

Degree: Master of Science (MSc) in Computer Science (Artificial Intelligence)

31-May-2021

Where: Khalifa University, Abu Dhabi, UAE

GPA: GPA: 3.87/4.0

Thesis: Genotype-Phenotype Predictions using Artificial Intelligence Algorithms

Supervisors: Dr. Andreas Henschel

10-October-2015—

Degree: Bachelor of Science (BSc) in Computer and Information Sciences

24-June-2019

Where: Pakistan Institute of Engineering and Applied Sciences (PIEAS),

Islamabad, Pakistan

GPA: GPA: 3.92/4.0

Thesis: Blockchain-based Smart Contract Management System for IoT devices

RESEARCH EXPERIENCE

*01-April-2023—
ongoing*

Project: PhD Candidate - Computational Biology Research

Where: The University of Queensland

Advisor: Dr. David Ascher

Contributions:

- **Project:** Polygenic Risk Score Benchmarking

- Unifying and evaluating multiple PRS calculation tools and methodologies. Developing standardized pipelines for comparative analysis of genotype-phenotype prediction methods across diverse populations

*01-June-2022—
31-March-2023*

Project: Research Associate (Full-time, Fixed-term)

Where: Khalifa University

Advisor: Dr. Ernesto Damiani

Contributions:

- **Project:** Machine learning for cloud seeding and precipitation prediction
- Developed ML methodologies for climate prediction using radar and satellite data preprocessing

*01-June-2021—
01-May-2022*

Project: Research Associate (Full-time, Fixed-term)

Where: Khalifa University

Advisor: Dr. Samuel F. Feng

Contributions:

- **Project:** Comparative analysis of machine learning vs polygenic risk scores
- Developed genetic file format conversion tools for bioinformatics research
- Published multiple peer-reviewed papers on genotype-phenotype prediction
- Presented research findings at international conferences

Ph.D. Projects

- **Benchmarking 80 OpenSNP Phenotypes** — A benchmarking framework to compare deep-learning architectures and polygenic risk score tools on 80 binary traits from openSNP. [GitHub](#)
- **Identifying Genes Associated with 30 Phenotypes** — A machine & deep learning pipeline to identify SNPs and genes linked to 30 phenotypes, using openSNP data and feature-importance analysis. [GitHub](#)
- **Automating Literature Review** — A system to automate literature extraction, summarization, and evidence ranking using NLP / AI methods. [GitHub](#)
- **PRS Migraine** — Literature review on Migraine.

- **Comparative QA Model Analysis** — A comparative analysis of 47 context-based question-answering models across eight datasets to benchmark generalisation.
[GitHub](#)
- **PRS Tools (PRSTools)** — A modular, scalable platform for computing, comparing, and visualizing polygenic risk scores, maintained with conda environments.
[Documentation](#)
- **GWAS Poker for PRS** — A novel tool which tells if a GWAS is suitable for PRS calculation.
[GitHub](#)
- **Heritability Tools** — A toolkit for heritability estimation using diverse data types (GWAS summary stats, genotype data, covariates, etc.) and methods (SumHer, LDSCC).
[GitHub](#)
- **Transfer Learning for Genotype–Phenotype Prediction** — An approach that fine-tunes models trained on large populations to improve prediction in smaller / underrepresented cohorts. (Pending)
- **EFGPP (Exploratory framework for genotype phenotype prediction)** — A framework to integrate different genetic architectures into a unified polygenic risk score.
[GitHub](#)
- **BioStarsGPT (Fine-Tuning LLMs for Bioinformatics)** — Training large language models on bioinformatics tools documentation (especially PRS) to enable domain-specific QA and guidance. (Your work with PRS-tool LLM dataset.)
[GitHub](#)
- **Annotate All Missense Variants (CAGI7)** — A computational framework to annotate and predict the functional / pathogenic impact of all missense variants, leveraging ensemble methods.
[GitHub](#)
- **Genotype-to-Medicine Pipeline** — A pipeline mapping genetic signals to potential drug-gable targets and therapeutic hypotheses.

TEACHING EXPERIENCE

*February 2024 —
Present*

Position: Lecturer (Teaching)

Where: Kaplan Business School, Brisbane & Gold Coast

Courses Delivered:

- TECH1200 – Programming in Python / Fundamentals of Programming (× 3)
- TECH2400 – Cyber Security (× 1) — [GitHub resources](#)
- TECH2100 – Introduction to Information Networks (× 1)
- TECH3300 – Machine Learning Applications (× 1)
- TECH6100 – Intermediate Programming (× 1)
- TECH6200 – Advanced Programming (× 1)

- TECH2200 – IT Project Management ($\times 1$)
- TECH1100 – Professional Practice and Communication in IT ($\times 1$)

Teaching Resources: Developed comprehensive online teaching platform: muhammadmuneebteachingresources.netlify.app

Responsibilities: Lecture delivery, tutorial facilitation, assessment marking, student consultation and academic support for undergraduate and postgraduate cohorts.

Student Numbers: Taught 200+ students across multiple courses

25-August-2019—
31-May-2021

Position: Teaching Assistant (Full-time, Fixed-term)

Where: Khalifa University

Course: Object Oriented Programming (Electrical Engineering and Computer Science Department)

Responsibilities: Laboratory session instruction, quiz and examination administration and marking, revision session delivery, student consultation

Publications

- Zeeshan Raza, Irfan Ul Haq, and Muhammad Muneeb. “Agri-4-All: A Framework for Blockchain Based Agricultural Food Supply Chains in the Era of Fourth Industrial Revolution”. In: *IEEE Access* 11 (2023), pp. 29851–29867. ISSN: 2169-3536. DOI: [10.1109/access.2023.3259962](https://doi.org/10.1109/access.2023.3259962). URL: <http://dx.doi.org/10.1109/access.2023.3259962>
- Aneela Zameer et al. “Short-term solar energy forecasting: Integrated computational intelligence of LSTMs and GRU”. in: *PLOS ONE* 18.10 (Oct. 2023). Ed. by Shuo-Yan Chou, e0285410. ISSN: 1932-6203. DOI: [10.1371/journal.pone.0285410](https://doi.org/10.1371/journal.pone.0285410). URL: <http://dx.doi.org/10.1371/journal.pone.0285410>
- Ahsan Baidar Bakht et al. “DeepBLS: Deep Feature-Based Broad Learning System for Tissue Phenotyping in Colorectal Cancer WSIs”. In: *Journal of Digital Imaging* 36.4 (Apr. 2023), pp. 1653–1662. ISSN: 1618-727X. DOI: [10.1007/s10278-023-00797-x](https://doi.org/10.1007/s10278-023-00797-x). URL: <http://dx.doi.org/10.1007/s10278-023-00797-x>
- Maryam Qamar et al. “Saliency Prediction in Uncategorized Videos Based on Audio-Visual Correlation”. In: *IEEE Access* 11 (2023), pp. 15460–15470. ISSN: 2169-3536. DOI: [10.1109/access.2023.3244191](https://doi.org/10.1109/access.2023.3244191). URL: <http://dx.doi.org/10.1109/access.2023.3244191>
- Muhammad Muneeb, Samuel Feng, and Andreas Henschel. “Transfer learning for genotype-phenotype prediction using deep learning models”. In: *BMC Bioinformatics* 23.1 (Nov. 2022). ISSN: 1471-2105. DOI: [10.1186/s12859-022-05036-8](https://doi.org/10.1186/s12859-022-05036-8). URL: <http://dx.doi.org/10.1186/s12859-022-05036-8>
- Muhammad Muneeb, Samuel F. Feng, and Andreas Henschel. “Deep Learning Pipeline for Image Classification on Mobile Phones”. In: *Artificial Intelligence and Applications*. AIAPP 2022. Academy and Industry Research Collaboration Center (AIRCC), May 2022, pp. 1–20. DOI: [10.5121/csit.2022.120901](https://doi.org/10.5121/csit.2022.120901). URL: <http://dx.doi.org/10.5121/csit.2022.120901>

- Jawad-ur-Rehman Chughtai, Irfan Ul Haq, and Muhammad Muneeb. “An attention-based recurrent learning model for short-term travel time prediction”. In: *PLOS ONE* 17.12 (Dec. 2022). Ed. by Xiyu Liu, e0278064. ISSN: 1932-6203. DOI: [10.1371/journal.pone.0278064](https://doi.org/10.1371/journal.pone.0278064). URL: <http://dx.doi.org/10.1371/journal.pone.0278064>
- Muhammad Muneeb. “LSTM input timestep optimization using simulated annealing for wind power predictions”. In: *PLOS ONE* 17.10 (Oct. 2022). Ed. by Seyedali Mirjalili, e0275649. ISSN: 1932-6203. DOI: [10.1371/journal.pone.0275649](https://doi.org/10.1371/journal.pone.0275649). URL: <http://dx.doi.org/10.1371/journal.pone.0275649>
- Jawad-Ur-Rehman Chughtai et al. “Travel Time Prediction Using Hybridized Deep Feature Space and Machine Learning Based Heterogeneous Ensemble”. In: *IEEE Access* 10 (2022), pp. 98127–98139. ISSN: 2169-3536. DOI: [10.1109/access.2022.3206384](https://doi.org/10.1109/access.2022.3206384). URL: <http://dx.doi.org/10.1109/access.2022.3206384>
- Noureen Zafar et al. “Traffic Prediction in Smart Cities Based on Hybrid Feature Space”. In: *IEEE Access* 10 (2022), pp. 134333–134348. ISSN: 2169-3536. DOI: [10.1109/access.2022.3231448](https://doi.org/10.1109/access.2022.3231448). URL: <http://dx.doi.org/10.1109/access.2022.3231448>
- Muhammad Muneeb, Samuel Feng, and Andreas Henschel. “An empirical comparison between polygenic risk scores and machine learning for case/control classification”. In: (Feb. 2022). DOI: [10.21203/rs.3.rs-1298372/v1](https://doi.org/10.21203/rs.3.rs-1298372/v1). URL: <http://dx.doi.org/10.21203/rs.3.rs-1298372/v1>
- Muhammad Muneeb, Samuel F. Feng, and Andreas Henschel. “Can We Convert Genotype Sequences Into Images for Cases/Controls Classification?” In: *Frontiers in Bioinformatics* 2 (June 2022). ISSN: 2673-7647. DOI: [10.3389/fbinf.2022.914435](https://doi.org/10.3389/fbinf.2022.914435). URL: <http://dx.doi.org/10.3389/fbinf.2022.914435>
- Muhammad Muneeb, Samuel F. Feng, and Andreas Henschel. “Heritability, genetic variation, and the number of risk SNPs effect on deep learning and polygenic risk scores AUC”. in: *2022 14th International Conference on Bioinformatics and Biomedical Technology. ICBBT 2022*. ACM, May 2022, pp. 65–71. DOI: [10.1145/3543377.3543387](https://doi.org/10.1145/3543377.3543387). URL: <http://dx.doi.org/10.1145/3543377.3543387>
- Muhammad Muneeb, Samuel F. Feng, and Andreas Henschel. “Tutorial on 8 Genotype Files Conversion”. In: *2022 10th International Conference on Bioinformatics and Computational Biology (ICBCB)*. IEEE, May 2022, pp. 13–17. DOI: [10.1109/icbcb55259.2022.9802470](https://doi.org/10.1109/icbcb55259.2022.9802470). URL: <http://dx.doi.org/10.1109/icbcb55259.2022.9802470>
- Muhammad Muneeb. “Method to integrate speaker identification, speech recognition, and information retrieval algorithms for speaker-based information retrieval”. In: *International Journal of Knowledge Engineering and Data Mining* 7.3/4 (2022), p. 234. ISSN: 1755-2095. DOI: [10.1504/ijkedm.2022.126069](https://doi.org/10.1504/ijkedm.2022.126069). URL: <http://dx.doi.org/10.1504/ijkedm.2022.126069>
- Farah Shahid, Aneela Zameer, and Muhammad Muneeb. “A novel genetic LSTM model for wind power forecast”. In: *Energy* 223 (May 2021), p. 120069. ISSN: 0360-5442. DOI: [10.1016/j.energy.2021.120069](https://doi.org/10.1016/j.energy.2021.120069). URL: <http://dx.doi.org/10.1016/j.energy.2021.120069>

- Muhammad Muneeb et al. “SmartCon: A Blockchain-Based Framework for Smart Contracts and Transaction Management”. In: *IEEE Access* 10 (2022), pp. 23687–23699. ISSN: 2169-3536. DOI: [10.1109/access.2021.3135562](https://doi.org/10.1109/access.2021.3135562). URL: <http://dx.doi.org/10.1109/access.2021.3135562>
- Muhammad Muneeb and Andreas Henschel. “Eye-Color and Type-2 Diabetes Phenotype Prediction From Genotype Data Using Deep Learning Methods”. In: (Dec. 2020). DOI: [10.21203/rs.3.rs-125397/v1](https://doi.org/10.21203/rs.3.rs-125397/v1). URL: <http://dx.doi.org/10.21203/rs.3.rs-125397/v1>
- Zeeshan Raza et al. “Energy Efficient Multiprocessing Solo Mining Algorithms for Public Blockchain Systems”. In: *Scientific Programming* 2021 (Oct. 2021). Ed. by Jiwei Huang, pp. 1–13. ISSN: 1058-9244. DOI: [10.1155/2021/9996132](https://doi.org/10.1155/2021/9996132). URL: <http://dx.doi.org/10.1155/2021/9996132>
- Muhammad Muneeb and Zeeshan Raza. “Tree-based blockchain architecture for supply chain”. In: *International Journal of Blockchains and Cryptocurrencies* 2:2 (2021), p. 143. ISSN: 2516-6433. DOI: [10.1504/ijbc.2021.118113](https://doi.org/10.1504/ijbc.2021.118113). URL: <http://dx.doi.org/10.1504/ijbc.2021.118113>
- Farah Shahid, Aneela Zameer, and Muhammad Muneeb. “Predictions for COVID-19 with deep learning models of LSTM, GRU and Bi-LSTM”. in: *Chaos, Solitons and Fractals* 140 (Nov. 2020), p. 110212. ISSN: 0960-0779. DOI: [10.1016/j.chaos.2020.110212](https://doi.org/10.1016/j.chaos.2020.110212). URL: <http://dx.doi.org/10.1016/j.chaos.2020.110212>
- Aneela Zameer et al. “Fractional-order particle swarm based multi-objective PWR core loading pattern optimization”. In: *Annals of Nuclear Energy* 135 (Jan. 2020), p. 106982. ISSN: 0306-4549. DOI: [10.1016/j.anucene.2019.106982](https://doi.org/10.1016/j.anucene.2019.106982). URL: <http://dx.doi.org/10.1016/j.anucene.2019.106982>
- Huma Pervez et al. “A Comparative Analysis of DAG-Based Blockchain Architectures”. In: *2018 12th International Conference on Open Source Systems and Technologies (ICOSST)*. IEEE, Dec. 2018. DOI: [10.1109/icosst.2018.8632193](https://doi.org/10.1109/icosst.2018.8632193). URL: <http://dx.doi.org/10.1109/icosst.2018.8632193>
- Zeeshan Raza et al. “Energy Efficient Multiprocessing Solo Mining Algorithms for Public Blockchain Systems”. In: *Scientific Programming* 2021 (Oct. 2021). Ed. by Jiwei Huang, pp. 1–13. ISSN: 1058-9244. DOI: [10.1155/2021/9996132](https://doi.org/10.1155/2021/9996132). URL: <http://dx.doi.org/10.1155/2021/9996132>

Conference Presentations & Invited Talks

- **Oral Presentation:** InCOB 2023 (International Conference on Bioinformatics)
- **Poster Presentation:** ABACBS 2023 (Australian Bioinformatics and Computational Biology Society)
- **Poster Presentation:** Lorne Genome Conference 2024
- **Presentation:** ESHG 2024 (European Society of Human Genetics)

Manuscripts Under Review/In Preparation

- Muneeb M, Ascher D. “Benchmarking 80 binary phenotypes from the openSNP dataset using deep learning algorithms and polygenic risk score tools.” [GitHub Documentation](#)
- Muneeb M, Feng SF, Henschel A. “Comparative analysis of machine learning and polygenic risk scores for cases/controls classification on simulated data.” [GitHub Documentation](#)
- Muneeb M, Damiani E. “Short-term Rain Prediction Using Climate Data and Cloud Presence Information.” [GitHub Documentation](#)
- Muneeb M, Damiani E. “Five procedures for satellite images and radar data processing for climate-related prediction problems.” [GitHub Documentation](#)

Community Engagement & Outreach

- **School Science Outreach Program** - Holy Family Primary School, Indooroopilly (November 2025)

Academic Honors, Fellowships, Scholarships, Competitions

- Full fee waiver in High School (Merit-Based)
- Got 6th Position in Lahore Board (High School)
- Financial Aid in Bachelor’s
- Gold medalist in Bachelor’s
- Graduate Fellowship in Master’s
- Third place in 1st Kibo Robot Programming Challenge preliminary round conducted in UAE
- Third position in Stereo-seq Spatial Data Challenge

Articles Reviewed

- Journal of Ambient Intelligence and Humanized Computing
- Alternative Therapies in Health and Medicine
- Computational and Structural Biotechnology Journal
- PLOS one

Thesis

- **Bachelor’s Thesis:** [Blockchain-based Smart Contract Management System for IOT devices](#)
- **Master’s Thesis:** [Genotype Phenotype Predictions using Artificial Intelligence Algorithms](#)

References

- **David Ascher (Current Supervisor)**, School of Chemistry and Molecular Biology, The University of Queensland, Queen Street, 4067, Queensland, Australia email: d.ascher@uq.edu.au
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- **Samuel F. Feng**, Department of Science and Engineering, Sorbonne University Abu Dhabi, Abu Dhabi, UAE email: samuel.feng@sorbonne.ae
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