Asgher Ali

PhD in Mathematics

📅 1990-01-03
📱 +92-3354462930
🐦 @aasgher385
⭕ @aasgher385
✉️ asgher.ali@lums.edu.pk
🌐 https://aasgher385.github.io

Optimal Control, Numerical Analysis, Mathematical Modeling

🏢 Experience

2022–Now **Research Assistant**, *Lahore University of Management Sciences* 📍 Lahore, Pakistan

- Effective dosing strategies in the presence of resistant strains
- Data driven approaches (PINNS) to solve class of dosing problems on a chemostat based ODE and PDE models (NeuralPDE.jl routine in Julia)
- Comprehensive study on a direct approach based on Gradient Descent Method to solve class of optimal control problems

2015–2022 **Teaching Assistant**, *Lahore University of Management Sciences* 📍 Lahore, Pakistan

- Linear Algebra with Differential Equations in Fall 2015, Summer 2022
- Advanced Numerical Analysis in Spring 2019-20
- Scientific Computation and Simulation in Python, Spring 2020-21
- Quantitative Finance in Spring 2021-22
- Probability in Summer 2021, Summer 2022

2019-2021 **Visiting Lecturer**, *University of Central Punjab* 📍 Lahore, Pakistan

- Basic Mathematics in Fall 2019, Fall 2020
- College Mathematics in Fall 2020, Spring 2021
- Quantitative Methods in Fall 2020

2020–2021 **Visting Lecturer**, *University of Management and Technology* 📍 Lahore, Pakistan

- Basic Mathematics and Statistics QM-230
- Inferential Statistics QM-375

2016–2017 **Visting Researcher**, *Mälardalens University* 📍 Västerås, Sweden

The purpose of the research mobility wast to establish the research cooperation between EU and ASIA in Mathematics and Appiled Mathematics. It was funded by EU commision Erasmus Mundus program (Action-2). Participated in research seminar, workshops and cooperated with researcher at Malardalens University on joint research project.

2014–2015 **Research Assistant**, *Lahore University of Management Sciences* 📍 Lahore, Pakistan

Literature review in mathematical ecology, specifically on a problem of finding out the disease based extinction of an amphibian population under Allee effect.

🏛️ Education

2015-2022 **PhD**, *Applied Mathematics (Optimal Control Theory)*, LUMS 📍 Lahore, Pakistan

2013-2015 **Master's Degree**, *Mathematics*, LUMS 📍 Lahore, Pakistan

2008-2010 **Master's Degree**, *Mathematics*, University of the Punjab 📍 Lahore, Pakistan

2006-2008 **Bachelor's Degree**, *Mathematics & Statistics*, Govt. College of Science 📍 Lahore, Pakistan

📘 Publications

[1] Asgher Ali, Sultan Sial, and Adnan Khan. "A Computational Approach to Optimal Control Problems using Gradient Descent". In: *Mathematics and Computer in Simulation* (Submitted).

[2] Asgher Ali et al. "Effective antibiotic dosing in the presence of resistant strains". In: *PLOS One* (2022).

💻 Skills

Scripting	Julia

- Preferable programming language for computations
- Expertise in JuMP, Optim.jl, Optimization.jl, NeuralPDE.jl, Flux.jl
- ModelingToolkit.jl, MethodOfLines.jl, ApproxFun.jl, ChebyshevApprox.jl

Scripting	Python & MATLAB
Management	Github, Slack, MS Excel, Google Sheets
Web	Jekyll, Github Pages
Others	Inkscape, LaTeX, Beamer, Markdown

🏛 Fellowhips

📅	2021	LUMS Travel Grant
📅	2016	Erasmus Mundus Research Mobility Fellowship
📅	2015	PhD Fellowship by LUMS
📅	2013	MS Fellowship by LUMS

💬 Selected Presentations

📅	2022	Effective antibiotic dosing in the presence of resistant strains	📍 LUMS, Pakistan
📅	2021	Optimal control applied to class of problems using direct gradient descent method	📍 Antalya, Turkey
📅	2021	PhD Research seminar on Optimal control theory via steepest descent method	📍 LUMS, Pakistan

ℹ️ Interests

Reading, Running, Cinema, Poker, Photography, Science-Fiction, Popular science

👥 References

Adnan Khan, PhD

○ **Designation:** Associate Professor
○ **Affiliation:** Department of Mathematics, Lahore University of Management Sciences, Lahore, Pakistan
○ **Email Address:** adnan.khan@lums.edu.pk

Sultan Sial, PhD

○ **Designation:** Associate Professor
○ **Affiliation:** Department of Mathematics, Lahore University of Management Sciences, Lahore, Pakistan
○ **Email Address:** sultans@lums.edu.pk

Mudassar Imran, PhD

○ **Designation:** Associate Professor
○ **Affiliation:** Department of Mathematics and Sciences, Ajman University, Ajman, UAE
○ **Email Address:** mudassar.imran@ajman.ac.ae