

Koushik Roy

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Google Scholar: scholar.google.com/citations?user=K0VYprUAAAAJ

Research Interests

ML for Systems, ML for Software Engineering, Software Systems, Distributed Systems

Education

Columbia University in the City of New York, New York, NY

Sep 2021 – Feb 2023

MS, Computer Science

Thesis title: Geometry-aware Architectures for Inverse Protein Folding using AlphaFold2

Advisor: [Mohammed AlQuraishi](#)

GPA: 3.60/4.0

North South University, Dhaka, Bangladesh

Sep 2015 – Dec 2019

BS, Computer Science & Engineering

Advisor: [Nabeel Mohammed](#)

GPA: 3.53/4.0 (*cum-laude distinction*)

Experience

Elementary Robotics Inc., Pasadena, CA

Jan 2023 – Jun 2024

Software Engineer

Software Engineering Team for Edge Computing

Columbia University in the City of New York, New York, NY

Jan 2022 – Dec 2022

Graduate Teaching Assistant

Classes Taught: Applied Deep Learning (Prof. Joshua B. Gordon),
Computer Systems for Data Science (Prof. Asaf Cidon)

Columbia University in the City of New York, New York, NY

Sep 2021 – Dec 2022

Research Assistant for MS Thesis

Supervised by Prof. AlQuraishi & Nazim Bouatta

North South University, Dhaka, Bangladesh

Jan 2021 – Aug 2021

Research Assistant (Apurba – NSU R&D Lab)

Supervised by Prof. Nabeel Mohammed

Publications

A multifaceted evaluation of representation of graphemes for practically effective Bangla OCR

Koushik Roy, M S Hossain, P K Saha, S Rohan, I Ashrafi, I M Rezwan, F Rahman, BM M Hossain, A Kabir, N Mohammed

International Journal on Document Analysis and Recognition (**IJDAR**), 2023

Single-sequence protein structure prediction using a language model and deep learning

R Chowdhury*, N Bouatta*, S Biswas*, C Floristean*, A Kharkar, Koushik Roy, C Rochereau, G Ahdriz, J Zhang, G M Church, P K Sorger, M AlQuraishi

Nature Biotechnology, 2022 [IF: 68.16] (featured on the cover of the journal as well)

Analysis of Bangla Keyboard Layouts Based on Keystroke Dynamics

S Rohan, Koushik Roy, P K Saha, S Hossain, F Rahman, N Mohammed

Intelligent Systems and Sustainable Computing: Proceedings of **ICISSC**, 2022

MHASAN: Multi-Head Angular Self Attention Network for Spoof Detection

M Hasan*, Koushik Roy*, L Rupty, M Hossain, S Sengupta, S N Taus, N Mohammed

International Conference on Pattern Recognition (**ICPR**), 2022

Bi-FPNFAS: Bi-directional feature pyramid network for pixel-wise face anti-spoofing by leveraging fourier spectra

Koushik Roy, M Hasan, L Rupty, M Hossain, S Sengupta, S N Taus, N Mohammed

Sensors, 2021

A-DeepPixBis: Attentional angular margin for face anti-spoofing

M S Hossain, L Rupty, Koushik Roy, M Hasan, S Sengupta, N Mohammed

International Conference on Digital Image Computing: Techniques and Applications (**DICTA**), 2021

An analytical approach for enhancing the automatic detection and recognition of skewed bangla license plates

Koushik Roy, A M S Khan, M Ali, S R Simanto, N Mohammed, M Atick, S Islam, M Islam

International Conference on Bangla Speech and Language Processing (**ICBSLP**), 2019

A Traffic Jam Prediction Model for dynamic routes using Global Positioning Systems Data from Vehicles at Different Times of the Day

Koushik Roy, A A Iman, N Islam, A Firoze

International Symposium on Advanced Intelligent Systems (**SCIS**), 2018

Selected Press Coverage

A language model beats alphafold2 on orphans

by Jennifer M. Michaud, Ali Madani & James S. Fraser, 2022

Technical Skills

Languages Python, C++, C, Java, JavaScript, SQL

Frameworks PyTorch, TensorFlow, Spark, Flask, Express.js, React, Redux

Other Tools JIRA, Git, CircleCI, Docker, MongoDB, MySQL, AWS, GCP

Achievements

Article Featured on the cover of Nature Biotechnology Journal (Impact Factor: 68.16)

Link to the cover: [nature.com/nbt/volumes/40/issues/11](https://www.nature.com/nbt/volumes/40/issues/11)

Champion at Technovation Data Science Hackathon 2019

organized by [NSU ACM Student Chapter](#)

Runners-up at Grameenphone API Hackathon 2019

organized by [Telenor Group](#)

Ranked 2nd at Intra NSU Programming Contest 2018

organized by the [Dept. of Computer Science, NSU](#); Ranklist [link](#).

ACM ICPC Regionals (2015-2019)

organized by various universities; ICPC Profile [link](#).