Md Sahadul [**Hasan Arian**]

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Education

**North South University**, Dhaka, Bangaldesh January 2020-December 2023
Bachelor of Science in Computer Science and Engineering Conferred: December 2024
Specialization Trail: Artificial Intelligence, Algorithms, and Computation
GPA: overall 3.90/4.00; CS-only 4.00/4.00; Summa Cum Laude

Publications

**Arian, M. S. H**, Sifat, F. A., Ahmed, S., Mohammed, N., and Farook, T. H. *Unsupervised tooth segmentation from three dimensional scans of the dental arch using domain adaptation of synthetic data.* International Journal of Medical Informatics, 2025.

Sifat, F. A., **Arian, M. S. H.**, Ahmed, S., Farook, T. H., Mohammed, N., and Dudley, J. *An Application of 3D Vision Transformers and Explainable AI in Prosthetic Dentistry.* Applied AI Letters, 2024.

**Arian, M. S. H.**, Rakib, M. T. A., Ali, S., Ahmed, S., Farook, T. H., Mohammed, N., & Dudley, J. *Pseudo labelling workflow, margin losses, hard triplet mining, and PENViT backbone for explainable age and biological gender estimation using dental panoramic radiographs.* SN Applied Sciences, 2023.

**Arian, M. S. H**, Sifat, F. A., Ahmed, S., Mohammed, N., and Farook, T. H. *Dental Loop Chatbot: A Prototype Large Language Model Framework for Dentistry.* Software, 2024.

Research Experience

**North South University & Adelaide Dental School** January 2023-December 2024
with Dr. Nabeel Mohammed(NSU), Dr. Taseef H. Farook(Adelaide), and Saif Ahmed(NSU)

- Advanced literature on forensic dental AI by developing supervised and semi-supervised approaches for age prediction and age-bracket classification on dental X-rays, incorporating FullGrad explainability for interpretability.
- Researched end-to-end dental diagnosis systems to improve clinical workflows by segmenting individual teeth from 3D jaw scans and classifying treatment types (inlay/onlay).
- Enhanced classification accuracy for inlay/onlay treatment prediction from previous state-of-the-art (60%) to 90% on the same validation dataset collected by the Adelaide Dental School, demonstrating significant methodological improvement.
- Developed a tooth part segmentation pipeline (gum, incisor, premolar/canine, molar) achieving 0.95 mIoU without manual annotations through domain adaptation using synthetically generated 3D dental arches.
- Explored the integration of large language models into clinical dental workflows through a chatbot trained on dental literature and guidelines, evaluating Retrieval-Augmented Generation and fine-tuning strategies for knowledge alignment.

Industry Experience

**Invisible Technologies, Inc.** April 2024-Present
Remote Full Stack Software Developer (USA, Remote)

- Processed 450+ multi-turn LLM dialogues and produced peer-reviewed gold-standard outputs; averaged 40 min per case (vs. team 60 min), which materially accelerated experimental throughput and improved RLHF evaluation reliability.
- Validated cross-stack implementation skills by passing internal coding proficiency tests across 14+ languages (Python, JS, C++, Go, Dart, Kotlin, SQL, etc.), enabling end-to-end dataset generation and evaluation pathway, that made me top 1% of the AI Trainer within the company.
- Authored 240+ "ideal completions" by systematic error-labeling and rewrite; integrated these gold artifacts into training/validation pipelines, directly informing model selection and fine-tuning decisions.
- Engineered a multi-stage code improvement pipeline that converted fragmented model outputs into standalone, production-grade benchmark webapps (accessible, responsive, polished); consolidated iterative fixes to compress 10–20 turn refinement into single-turn reproducible generation for experiments.

- Led independent agent-vs-agent evaluations (OpenAI Codex vs Vendors Async Agent), producing comparative analyses on code correctness, plan fidelity, and execution; delivered actionable remediation and win/loss metrics that were adopted into model tuning cycles.

Other Experience

**Freelancing** December 2023-April 2024

AI Engineer

- Setting up clients' private datasets and training pipelines with models such as KPConv, PointNet++, and PointNet.
- Consulting on resolving overfitting in experiments using point cloud part segmentation with Aerial 3D Land LiDAR datasets.

Competitive Programming

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| CodeForces, *863 Problems: Dynamic Programming, Graph Theory, Number Theory, etc.* | 2020-2023 |
| ICPC Dhaka Regional Preliminary *Honorable Mention, Rank 200* | 2020-2021 |
| ICPC Dhaka Regional Preliminary *Honorable Mention, Rank 305* | 2023-2024 |
| ICPC Dhaka Regional Preliminary | 2022-2023 |
| ICP3 Dhaka Regional Preliminary | 2021-2022 |

Awards

2024 North South University, *Summa Cum Laude – 24th overall, 7th in CS @ 25th Convocation*
2022 North South University, *Merit Based Tuition Waiver (top 1%)* – $2100

Community Involvements

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| Alokito Teachers NGO, *Volunteering as Software Developer* | February 2024-June 2025 |
| NSU Problem Solvers Community, *Rated Member* | May 2020-December 2022 |
| Student body of High School, *Counselor* | January 2018-May 2019 |

References

**Dr. Nabeel Mohammed**
Professor of Computer Science at North South University, **Email:** nabeel.mohammed@northsouth.edu

**Saif Ahmed**
Lecturer at North South University, Team Lead at Invisible, **Email:** saif.ahmed02@northsouth.edu

**Dr. Taseef Hasan Farook**
Research Associate, Flinders University, Australia, **Email:** taseef.farook@flinders.edu.au
Research Associate, University of Adelaide, Australia, **Email:** taseef.farook@adelaide.edu.au