Sami Ul Haq

+92 333 517514 | sami.haq99gmail.com | https://sami-haq99.github.io

Education

National University of Sciences and Technology (NUST) — Islamabad, Pakistan
MS in Software Engineering — *Sep. 2014 – May 2017*

Quaid i Azam University (QAU) — Islamabad, Pakistan
MSC in Information Technology — *Jan. 2011 – Dec 2013*

Virtual University (VU) — Islamabad, Pakistan
BSc in Computer Science — *Feb. 2009 – Oct 2011*

Experience

Research Assistant — October 2018 – Present
Fatima Jinnah Women University — *Rawalpindi, Pakistan*

- Designed and Developed a dynamic context integration method for context-aware Neural Machine Translation
- Evaluated challenges to improve and adopt NLP to less-focused and low-resourced areas
- Experimented Transfer Learning, Multi-lingual Transfer & Language Modelling for different NLP projects
- Gave presentation on NMT at International Nathiagali Summer College (INSC) to 50 attendees
- Successfully submitted, participated and presented research work at ACL Workshops (WMT20, WMT21 & WNGT20)
- Performed statistical analysis on Quantum RNGs, TRNGs and PRNGs. Identified entropy amplification techniques for high quality random number extraction from raw data
- Collaborating with colleagues to create presentations, write research articles and conduct meetings with clients

Software Engineer — July 2013 – Sep. 2018
Pakistan Air Force — *Islamabad, Pakistan*

- Devised and executed phase-wise approach to migrate Command & Control modules of an Air Space Management System from Apple i386 architecture to Intel-Xeon based hardware
- Revamped existing back-bone encoding algorithm for efficient, reliable, and real-time communication of primary and secondary Radars
- Collaborated with international teams to carried out system integration with Airborne Warning and Control Systems (AWACS)
- Provided assistance to HR team in conducting first and second round interviews for software developer applicants

Research Projects

Document Level Neural Machine Translation of Low Resourced Languages

- Project focused on utilizing techniques like Back-translation, Domain Adaptation to improve performance of NMT systems for low-resourced languages (Hindi-Marathi).
- **Publication**: "Document Level NMT of Low-Resource Languages with Backtranslation." Proceedings of the Fifth Conference on MT. 2020

Reverse Engineering UML Structural & Behavioural Features from Java Source Code

- Primary project focused on generation of Text-to-Model (T2M) transformation for static and dynamic models extraction. Object oriented constructs were transformed into EMF-UML Activity, Use-Case, Class and, State machine diagram.
- **Publication:** "A Model Driven Reverse Engineering Framework for Generating High Level UML Models from Java Source Code", IEEE Access, 2019, Volume 7, Pages 158931 - 158950

Model Driven Approach for Modelling & Analysis of Physical Infrastructure Protection

- The project involved building Domain Specific Modeling Language for physical security by extending industry standard UML. Annotated UML models then transformed into Bayesin Networks for Quantitative analysis of security configurations.
- **Publication:** "A Novel Approach for Modeling Security Aspects of Physical Infrastructures", International Conference on High-Performance Compilation, Computing and Communications (HP3C-2017)

Publications

[1] Sami Ul Haq et al. "Context-Aware Neural Machine Translation using Selected Context". In: *2022 19th International Bhurban Conference on Applied Sciences and Technology (IBCAST)*. IEEE. 2022, pp. 349–352.

[2] Anam Amjad et al. "UML Profile for Business Process Modeling Notation". In: *2021 International Bhurban Conference on Applied Sciences and Technologies (IBCAST)*. 2021, pp. 389–394. DOI: 10.1109/IBCAST51254.2021.9393223. URL: https://ieeexplore.ieee.org/document/9393223.

[3] Sumbal Naz, Sadaf Abdul Rauf, and Sami Ul Haq. "FJWU Participation for the WMT21 Biomedical Translation Task". In: *Proceedings of the Sixth Conference on Machine Translation*. Online: Association for Computational Linguistics, Nov. 2021, pp. 857–862. URL: https://aclanthology.org/2021.wmt-1.86.

[4] Sumbal Naz et al. "FJWU participation for the WMT20 Biomedical Translation Task". In: *Proceedings of the Fifth Conference on Machine Translation*. Online: Association for Computational Linguistics, Nov. 2020, pp. 849–856. URL: https://aclanthology.org/2020.wmt-1.92.

[5] Sami Ul Haq et al. "Document Level NMT of Low-Resource Languages with Backtranslation". In: *Proceedings of the Fifth Conference on Machine Translation*. Online: Association for Computational Linguistics, Nov. 2020, pp. 442–446. URL: https://aclanthology.org/2020.wmt-1.53.

[6] Sami Ul Haq et al. "Improving Document-Level Neural Machine Translation with Domain Adaptation". In: *Proceedings of the Fourth Workshop on Neural Generation and Translation*. Online: Association for Computational Linguistics, July 2020, pp. 225–231. DOI: 10.18653/v1/2020.ngt-1.27. URL: https://aclanthology.org/2020.ngt-1.27.

[7] Umair Sabir et al. "A model driven reverse engineering framework for generating high level UML models from java source code". In: *IEEE access* 7 (2019), pp. 158931–158950. URL: https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8890645.

[8] Sami Ul Haq and Usman Qamar. "Ontology Based Test Case Generation for Black Box Testing". In: *Proceedings of the 2019 8th International Conference on Educational and Information Technology*. 2019, pp. 236–241. URL: https://dl.acm.org/doi/abs/10.1145/3318396.3318442.

[9] Sami Ul Haq et al. "A Novel Approach for Modeling Security Aspects of Physical Infrastructures". In: *Proceedings of the International Conference on High Performance Compilation, Computing and Communications*. 2017, pp. 39–44. URL: https://dl.acm.org/doi/abs/10.1145/3069593.3069612.

Honors

Merit Award (3MT) : College of E&ME, (NUST), Pakistan (2022)
Summer College : Selected for 1-week International Summer College (INSC), Pakistan (2022)
Certificate of Appreciation : Pakistan Air Force (PAF), Pakistan (2017)
Vice Chancellor's Gold Medal : Institute of Information Technology, QAU, Pakistan (2016)
Academic Scholarship Award : Institute of Information Technology, QAU, Pakistan (2011-2013)

Technical Skills

Programming: Proficient in C, C++, Matlab, Java, Python and LATEX; Capable of C#, SQL
Toolkits and Frameworks: Git, PyTorch,TensorFlow, fairseq, transformers, POSIX Threads, ElasticSearch
Developer Tools: Docker, Google Cloud Platform, VS Code, Visual Studio, IBM ALM , Eclipse