

H. RAINAD KHAN ROHAN

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EDUCATION

Department of Computer Science and Engineering, University of Dhaka (Oct. 2024 – Present)

Master of Science (MSc) in Computer Science and Engineering (CSE); CGPA: **3.88/4.00** (without thesis)

Completed coursework on cloud computing, machine learning and data mining, text mining, VLSI and advanced logic design, and mathematical modeling and optimization.

Department of Nuclear Engineering, University of Dhaka (May 2023 – Oct. 2024)

Master of Science (MSc) in Nuclear Engineering; CGPA: **3.94/4.00**

Research topics included computational modeling of lead-cooled fast reactors and nuclear waste transmutation.

Department of Nuclear Engineering, University of Dhaka (Jan. 2018 – Apr. 2023)

Bachelor of Science (BSc) in Nuclear Engineering; CGPA: **3.97/4.00** (Position: **1st** out of 25 graduates)

Graduated top of my class with the highest grade point in department history till date, and the highest faculty-wide CGPA (Faculty of Engineering & Technology, University of Dhaka, Academic Session: 2017–18).

Dean's Award Recipient and Prime Minister Gold Medal Award Candidate.

RESEARCH INTERESTS

- Fission reactor neutronics, radiation transport methods, computational reactor design, evolutionary computation and algorithms for fuel cycle optimization.
- Design and analysis of advanced reactors (Generation-IV technologies such as LFR, SFR, GFR and SCWR) and small modular reactors, modeling and simulation, transmutation and radioactive waste management.
- AI/ML applications in nuclear engineering, scientific machine learning (SciML), physics-informed machine learning (PIML), deep learning, operator learning, and quantum computing.

SELECTED PUBLICATIONS

JOURNAL ARTICLES

- **H. Rainad Khan Rohan**, Md. Abidur Rahman Ishraq, Anton Evgenievich Kruglikov. Comparative neutron analysis of diverse seed blanket unit (SBU) concepts for the ACP-100 small modular reactor. *Nuclear Engineering and Design*, Volume 445, 2025, 114507, ISSN 0029-5493. <https://doi.org/10.1016/j.nucengdes.2025.114507>
- Afroza Shelley, **H. Rainad Khan Rohan**. Enhancing energy security in Bangladesh through small modular reactor integration: A geographical, industrial and demand-based perspective. *Energy Reports*, Volume 14, 2025, Pages 1917-1935. <https://doi.org/10.1016/j.egy.2025.08.030>
- Md. Nobir Hosen, **H. Rainad Khan Rohan**, Afroza Shelley. Optimization of loading quantity of minor actinides for elimination of boric acid and burnable absorbers from PWRs. *Nuclear Engineering and Design*, Volume 442, 2025, 114198. <https://doi.org/10.1016/j.nucengdes.2025.114198>
- Afroza Shelley, **H. Rainad Khan Rohan**, Md. Abidur Rahman Ishraq. Implementation of assembly shuffling for maximizing fuel utilization in the VVER-1200 reactor. *Nuclear Engineering and Design*, Volume 433, 2025, 113901. <https://doi.org/10.1016/j.nucengdes.2025.113901>
- K. M. Sourov, Md. Hossain Sahadath, **H. Rainad Khan Rohan**. Enhancing fuel breed-burn performance in a sodium-cooled fast reactor using a novel reactivity control method. *Progress in Nuclear Energy*, Volume 177, 2024, 105436. <https://doi.org/10.1016/j.pnucene.2024.105436>
- Md. Nobir Hosen, Md. Hossain Sahadath, **H. Rainad Khan Rohan**. Assessment of loading scheme and moderation impact on minor actinide transmutation in VVER-1000 fuel assembly. *Nuclear Engineering and Design*, Volume 429, 2024, 113591. <https://doi.org/10.1016/j.nucengdes.2024.113591>

- Abidur Rahman Ishraq, Anton Evgenievich Kruglikov, **H. Rainad Khan Rohan**. Strategic fuel management via a combined reload-reshuffle scheme in SMRs. *Nuclear Engineering and Design*, Volume 429, 2024, 113605. <https://doi.org/10.1016/j.nucengdes.2024.113605>
- Afroza Shelley, **H. Rainad Khan Rohan**, Md. Abidur Rahman Ishraq. Decay heat generation of VVER-1200 reactor spent fuel during the pool period. *Progress in Nuclear Energy*, Volume 176, 2024, 105379. <https://doi.org/10.1016/j.pnucene.2024.105379>
- Umme Mahbuba Nabila, Md. Hossain Sahadath, **H. Rainad Khan Rohan**. Potential of mixed oxide fuel for higher fissile conversion ratio in light water reactors. *Nuclear Engineering and Design*, Volume 424, 2024, 113295. <https://doi.org/10.1016/j.nucengdes.2024.113295>
- Md. Abidur Rahman Ishraq, **H. Rainad Khan Rohan**, Anton Evgenievich Kruglikov. Neutronic assessment and optimization of ACP-100 reactor core models. *Annals of Nuclear Energy*, Volume 205, 2024, 110588. <https://doi.org/10.1016/j.anucene.2024.110588>
- Md. Abidur Rahman Ishraq, Fahim Mahmud Razu, **H. Rainad Khan Rohan**. Neutronic evaluation of diverse fuel configurations for the supercritical water reactor (SCWR) core. *Nuclear Engineering and Design*, Volume 423, 2024, 113160. <https://doi.org/10.1016/j.nucengdes.2024.113160>
- Fahim Mahmud Razu, Md. Hossain Sahadath, **H. Rainad Khan Rohan**. An alternative approach for excess reactivity control of TRISO particles. *Annals of Nuclear Energy*, Volume 194, 2023, 110100. <https://doi.org/10.1016/j.anucene.2023.110100>
- **H. Rainad Khan Rohan**, Md. Hossain Sahadath. Enhancing transmutation rates of minor actinides using Zr and Y hydride and deuteride coatings in an LFR. *Progress in Nuclear Energy*, Volume 164, 2023, 104849. <https://doi.org/10.1016/j.pnucene.2023.104849>

INDUSTRIAL VISITS, TRAINING & WORK EXPERIENCES

Research Assistant (RA)

(July 1, 2023 – Ongoing)

Department of Nuclear Engineering, University of Dhaka

- Served as a research assistant to Prof. Dr. Afroza Shelley (shelley@du.ac.bd) and worked on research projects involving fuel cycle optimization and spent fuel decay heat characterization of the VVER-1200 reactor.

Lab Trainee, Center for Research Reactor (CRR)

(Aug. 14 – Aug. 21, 2022)

Atomic Energy Research Establishment (AERE), Bangladesh Atomic Energy Commission (BAEC)

- Obtained hands-on experience in the manual operation of the BAEC TRIGA Research Reactor (BTRR).
- Attained a thorough understanding of reactor thermal power and control rod calibration techniques, control rod worth measurement processes, and the usage of dosimeters and survey meters for radiation detection.
- Analyzed experimental data and employed mathematical models to calculate critical parameters such as control rod worth, core excess reactivity, and reactor shutdown margin.

Industrial Trainee, Center for Research Reactor (CRR)

(Dec. 12 – Dec. 23, 2021)

Atomic Energy Research Establishment (AERE), Bangladesh Atomic Energy Commission (BAEC)

- Acquired comprehensive knowledge about research reactors (RRs) and their functions, as well as the design, components, associated systems, and irradiation facilities of the BAEC TRIGA MARK-II Research Reactor (BTRR).
- Engaged in safety/fire drills, pre-startup reactor safety check, and monitored environmental radiation levels in the vicinity of the reactor building.
- Prepared a detailed report on the design, features, operation and maintenance of the BTRR.

PROFESSIONAL SKILLS

SOFTWARE

- **Modeling & Simulation Tools:** OpenMC, Serpent 2.1.32
- **Programming Languages:** C, C++, Python, MATLAB, Julia
- **Machine Learning & Scientific Computing Frameworks:** Scikit-learn, PyTorch, Tensorflow, PyCaret, DeepXDE, PyGAD, PyMOO, NEORL
- **Data Analysis & Visualization:** Pandas, NumPy, Matplotlib
- **Computer-Aided Design (CAD):** SOLIDWORKS
- **Document Preparation:** L^AT_EX, Microsoft Office

LANGUAGES

- **Bengali:** Native.
- **English:** Proficient; IELTS Academic – Overall Band Score 8.0 (October, 2025). 
- **Russian:** Basic/Elementary (as part of academic coursework at the Department of Nuclear Engineering, University of Dhaka).
- **Arabic:** Intermediate (took courses at Al-'Asr Institute, Mohakhali DOHS, Dhaka-1206, Bangladesh).

ORGANIZATION & LEADERSHIP

- Served as the class representative (CR) of my cohort throughout undergraduate, fulfilling responsibilities such as maintaining liaison with the office and faculty regarding class progress and addressing any student body concerns.
- Actively took part in the organization of several academic, research and cultural events within the department, including seminars, study tours, picnics, and the department's first research fair.

VOLUNTEERING SERVICES & EXTRA-CURRICULAR ACTIVITIES

PEER REVIEW

(2025 – Present)

- **Reviewer, Nuclear Technology**
Publisher: Taylor & Francis, American Nuclear Society (ANS).
Number of Articles Reviewed: 2
- **Reviewer, Nuclear Engineering and Design**
Publisher: Elsevier.
Number of Articles Reviewed: 6 

WORKSHOPS ATTENDED, TRAININGS & CERTIFICATIONS

- Second Joint ICTP-IAEA Workshop on Open-Source Nuclear Codes for Reactor Analysis (22–26 September, 2025) 
- 6th Youth in High-Dimensions: Recent Progress in Machine Learning, High-Dimensional Statistics and Inference & How Creative is Generative AI? (3–10 July, 2025) 
- Scientific Machine Learning (22 January – May 30, 2025) – Vizura AI Labs 
- 4th Joint ICTP-IAEA Workshop on Physics and Technology of Innovative Nuclear Energy Systems (11–15 November, 2024) 
- Hands-on Training at the AKR-2 Reactor (2–13 September, 2024) – Great Pioneer (Euratom Project) 
- Third Tritium School (18–22 March, 2024) – Titans Project (European Union) 
- Radiation Protection in Nuclear Environment (8–12 April, 2024) – Great Pioneer (Euratom Project) 

- Joint ICTP-IAEA Workshop on Modelling for Encapsulated ILW and HLW During Long-Term Storage (26 February – 1 March, 2024) 
- Reactor Transients, Nuclear Safety and Uncertainty and Sensitivity Analysis (19–23 February, 2024) – Great Pioneer (Euratom Project) 
- Hands-on Exercises on the BME Training Reactor (23 January – 1 February, 2024) – Great Pioneer (Euratom Project) 
- Core Modelling for Transients (8–12 January, 2024) – Great Pioneer (Euratom Project) 
- Deterministic Modelling of Nuclear Reactor Multiphysics (11–15 December, 2023) – European Nuclear Education Network (ENEN) 
- Core Modelling for Core Design (27 November – 1 December, 2023) – Great Pioneer (Euratom Project) 
- Neutron Transport at the Fuel Cell and Assembly Levels (16–20 October, 2023) – Great Pioneer (Euratom Project) 
- Nuclear Data for Energy and Non-Energy Applications (4–8 September, 2023) – Great Pioneer (Euratom Project) 
- Webinar on the Patent Cooperation Treaty (PCT) and Youth (4–5 September, 2023) – Organized by WIPO, IPO (Pakistan), and DPTD (Bangladesh) 
- 2023 MTV Nuclear Engineering Summer School (June 13 – August 10, 2023) – University of Michigan, Ann Arbor 

SCHOLARSHIPS, FELLOWSHIPS & GRANTS RECEIVED

- **ICT Fellowship (2025)** – 150,000 BDT awarded by the ICT Division, Ministry of Posts, Telecommunications and Information Technology, Government of Bangladesh, for conducting graduate-level research (thesis) at the Department of Computer Science and Engineering, University of Dhaka.
- **National Science and Technology (NST) Fellowship (2024)** – 54,000 BDT awarded by the Ministry of Science and Technology (MoST), Government of Bangladesh, for conducting graduate-level research (thesis) at the Department of Nuclear Engineering, University of Dhaka.
- **University Grants Commission Scholarship (2024)** – For acquiring the highest CGPA (undergraduate) among all departments under the Faculty of Engineering and Technology, University of Dhaka during the academic session of 2017-18.
- **61 Engineers' Trust Fund Scholarship (2021)**, University of Dhaka – For securing the highest CGPA (undergraduate) in the Department of Nuclear Engineering, Faculty of Engineering and Technology.
- **Azfar Alam Memorial Scholarship (2020)**, Azfar Alam Memorial Trust Fund – Awarded for excellent character, attendance, and academic performance.
- **Pre-Graduate Scholarship (2018–2021)**, University of Dhaka – Awarded in recognition of excellent character, regular attendance, and outstanding academic performance.

DISTINCTIONS, AWARDS & RECOGNITIONS

- **Dean's Award 2021** – In recognition of outstanding academic achievement in BSc (Hons.) in Nuclear Engineering (Graduating Session: 2020–21), University of Dhaka. 
- **Featured on the official website of the University of Dhaka** for participation in the 4th Joint ICTP-IAEA Workshop on Physics and Technology of Innovative Nuclear Energy Systems in Italy, and winning the Best Poster Award and 200€ cash prize. 
- **Best Poster Award and 200 Euro Cash Prize** – Presented at the 4th Joint ICTP-IAEA Workshop on Physics and Technology of Innovative Nuclear Energy Systems, ICTP, Trieste, Italy. 

- **Best Poster Award** – Undergraduate Category at the Nuclear Fest & Research Fair-2023, organized by the Department of Nuclear Engineering, University of Dhaka. 
- **Second Prize—Mujib 100 Years Nuclear Quiz Competition-2021** (Combined Undergraduate Group), organized by the Department of Nuclear Engineering, University of Dhaka. 

REFERENCE PERSONS

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