

Ahnaf Tahmid Chowdhury

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Summary

Nuclear engineer with 5+ years across research and industry, specializing in neutronics, coupled-physics, and open-source simulation tools. Founder of NukeHub and author of the Nucleide Rust toolkit; contributor to OpenMC, DAGMC, MOAB, and PyNE; previously software packaging consultant at Proxima Fusion (2024-2025).

Profiles

LinkedIn

ahnaf-tahmid-

GitHub

ahnaf-tahmid-chowdhury

Bluesky

ahnaf-tahmid

ResearchGate

Ahnaf-Tahmid-Chowdhury

Experience

NukeHub

Dhaka, Bangladesh

Founder

Oct 2023 to Present

Established an open-source platform for advancing nuclear technology, leading global collaborations and developing innovative nuclear tools.

Proxima Fusion

Munich, Germany (Remote)

Software Packaging Consultant

Sep 2024 to Nov 2025

Developing software packaging solutions to support Proxima Fusion's software stack, streamlining workflows for CAD-based neutronics.

Military Institute of Science and Technology

Dhaka, Bangladesh

Research Assistant

May 2022 to Jan 2024

Led the development of an SDR solution for disaster-prone areas, enhancing communication networks.

Institute of Radiation and Polymer Technology

Dhaka, Bangladesh

Research Fellow

Jul 2021 to Jun 2022

Conducted research on IoT-based radiation monitoring and AI-driven nuclear facility inspection systems, contributing to key publications and advancing real-time radiation mapping technologies.

Education

University of Wyoming School of Energy Resources

Intensive Seminar-Style Workshop — Nuclear Innovation and Energy Advocacy

Jul 2024 to Aug 2024

Focused on fostering innovation, and developing advocacy skills for nuclear energy.

Military Institute of Science and Technology

Bachelor of Science — Nuclear Science & Engineering

Feb 2018 to Mar 2022

Graduated with honors, focusing nuclear projects and contributing to research in radiation monitoring.

Thesis

Development of an IoT-Based Web Application for Realtime Radiation Dose Monitoring and Mapping for Various Locations

Mar 2022 — Advisor: Prof. Dr. Md. Azizur Rahman

This thesis develops a cloud-based web app for real-time radiation dose monitoring using IoT devices. It supports multiple users, features a responsive UI, and includes alerts for radiological events. The backend manages large data loads with real-time processing via WebSockets. The project also reprograms the SmartGeiger device for stable, continuous monitoring, providing practical insights for remote nuclear facility management.

Publications

Computational Cognitive Network-Based Radiological Mechanism Inspection Technology and Digitally Accessible High-Tech Investigation Robot for Radiological Ground Surveys, Nuclear Environment Inspection, and Radioactive Substance Screening

Oct 2025 — IOS Press

<https://doi.org/10.3233/ATDE251018>

Unifying the Open-Source Nuclear Landscape: The NukeHub Vision

Mar 2025 — OSSFE

<https://doi.org/10.5281/zenodo.15062001>

Artificial Neural Network Based Nuclear Facility Inspection System and Computerized High-Tech Exploration Robot for Radiological Ground Surveys, Nuclear Area Observation, Radioactive Material Detection and Handling

May 2024 — ISMEE2024

<https://doi.org/10.13140/RG.2.2.10486.20807>

Design and Development of a Radiation Survey and Rescue Robot with Shielding of Electronic Equipment from Radiation Damage with Image Radiation Mapping Facility

May 2024 — International Journal of Nuclear Security

<https://trace.tennessee.edu/ijns/vol9/iss2/4/>

Enhancing Cannabis Extraction Efficiency and Sustainability through Quantum Computing: A Review

Dec 2023 — Oriental Journal of Chemistry

<https://dx.doi.org/10.13005/ojc/390604>

Smartgeiger - Development of Background Radiation Monitoring with IoT based Device

Sep 2021 — IEEE

<https://ieeexplore.ieee.org/document/9528139>

Projects

NukeLab

Aug 2023

Effortlessly run nuclear simulations in the cloud with seamless peer collaboration.

<https://lab.nukehub.org>

NukeIDE

Mar 2025

An open-source Integrated Development Environment (IDE) specifically designed for nuclear simulation and engineering.

<https://github.com/nukehub-dev/nuke-ide>

Nucleide

Aug 2026

A fast, open-source nuclear engineering toolkit in Rust with Python bindings.

<https://nucleide.nukehub.org>

Mesh-Oriented datABase (MOAB)

Mar 2024

A software component for representing for creating, storing and accessing mesh data.

<https://sigma.mcs.anl.gov/>

OpenMC

May 2024

A community-developed Monte Carlo neutron and photon transport code.

<https://openmc.org>

DAGMC

Oct 2023

Direct Accelerated Geometry Monte Carlo.

<https://svalinn.github.io/DAGMC>

PyNE

Feb 2023

The Nuclear Engineering Toolkit.

<https://pyne.io>

Nuclear Reactor Monitoring System (NRMS)

Jul 2022

Enables easy access to the PRIS database with user-friendly data visualization.

<https://nrms.nukehub.org>

NukeAnalytics

Oct 2023

Make use of the PRIS database to analyze the data and generate charts and dashboards.

<https://analytics.nukehub.org>

NukeBox

Mar 2023

Package manager for easy management of essential libraries for nuclear physics simulations.

<https://nukebox.readthedocs.io>

Micropython Geiger	Oct 2020
Python module for micropython based Geiger counter. https://github.com/ahnaf-tahmid-chowdhury/micropython-geiger	
SmartGeiger	Sep 2020
Development of background radiation monitoring with IoT based device. https://github.com/ahnaf-tahmid-chowdhury/SmartGeiger	
Choropleth Bangladesh Map	Jun 2021
A choropleth map of Bangladesh with population density for each district. https://github.com/ahnaf-tahmid-chowdhury/Choropleth-Bangladesh	

Skills

Expertise — Programming Languages

HTML, CSS, JavaScript, TypeScript, Python, Rust, Bash

Experience — Programming Languages

C, C++, SQL, Cython, Go

Frameworks & Tools

Astro, React, FastAPI, Django, Docker, Kubernetes, PostgreSQL

Soft Skills — Supervision

Team Leadership, Team Management

Languages

English

Professional working proficiency

Bangla

Native or bilingual proficiency

Awards

Nuclear Innovation Bootcamp

Aug 2024

Nuclear Innovation Alliance

Pitched an AI-driven nuclear monitoring solution, honing financial planning and teamwork skills through intense collaboration.

Online Nuclear Dilemma

Apr 2020

Information Center on Nuclear Energy

Led a strategic analysis on nuclear-powered airships, concluding they were neither safe nor cost-effective for regional development.

Certifications

Medical Imaging and Radiotherapy

Nov 2022

Biomedical Engineering, MIST

Trained in quality assurance and maintenance of medical imaging systems.

Grant Writing

Advancing Targeted Cancer Therapy: Development and Evaluation of Lutetium-177 Radiopharmaceuticals for Precise Tumor Treatment (F22078)

International Atomic Energy Agency — Jul 2023

Submitted a comprehensive research proposal to advance the development of Lutetium-177 radiopharmaceuticals. The research focused on improving targeting specificity and therapeutic efficacy for cancer treatment. Although the proposal was not funded, it involved collaboration with leading research organizations and aimed to significantly contribute to advancements in cancer therapy.

Integration of Nuclear Techniques and Machine Learning Algorithms for Effective AMR Surveillance in Animal Production Settings (D32043)

International Atomic Energy Agency — Apr 2023

Submitted a research proposal focused on addressing antimicrobial resistance (AMR) in animal production through the integration of nuclear techniques and machine learning. The project aimed to develop predictive models for AMR distribution, evaluate alternative feed additives, and implement effective antimicrobial stewardship programs. Although the proposal was not funded, it sought to contribute significantly to global efforts in mitigating AMR in farm animal settings.

Design and Development of Nuclear Security and Surveillance System (ACC6031771)

Defence and Security Accelerator — Jul 2022

Proposal for the Remote Monitoring of Sensitive Sites (Phase 1) competition, focused on developing advanced nuclear security and surveillance systems. The proposal was not funded.

Volunteering

Roboment

Dec 2020 to Jun 2021

Dhaka, Bangladesh — Mentor

Mentored students in app development, circuit design, and robotics.

References

Professor Md. Azizur Rahman

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Grainger Professor Paul P.H. Wilson

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Dr. Jonathan Shimwell

Principal Fusion Engineer, Proxima Fusion

Phone: +49 162 4505013 — Email: jon@proximafusion.com