Yash Agarwal

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Education

2021 – 2026 **Integrated B.Tech and M.Tech, Indian Institute of Technology (BHU), Varanasi,** in Engineering Physics.
Thesis title: *Nano-materials for Bio-sensing.*

2020 **Class XII, Khalsa Model Senior Secondary School, Kolkata**.
All India Senior School Certificate Examination.

2018 **Class X, Khalsa Model Senior Secondary School, Kolkata**.
All India Secondary School Examination.

Skills And Interests

Languages	English, Hindi, Bengali, German.
Coding	Python, MATLAB, C, C++, Java, UniProt, AMYLPRED 2, Machine Learning.
Lab Methods	Hydrogel and Nanodot Synthesis, UV-Vis Spectroscopy, Rheology, DLS, Zeta.
Interest Areas	Biosensing, Nanotechnology, Biophysics, Computational Biology.
Relevant Coursework	Biophysics, Biophysical Techniques, Computational Physics, C Programming.

Research Projects

Monte-Carlo Simulation of Transport by Motor Proteins.	**Winter Intern** **Mentor- Dr. Ambarish Kunwar**	**1 Month** **(December 2024)**
· Learnt computational modelling of stochastic processes, like Monte-Carlo simulations, Gillespie algorithm, and TASEP. · Developing a 3D stochastic model to study cargo switching at microtubule intersections using Monte-Carlo. · Learnt Arduino programming and microscope physics to build a low-cost tabletop optical tweezer with fluorescence imaging.		
Bio-nanodots for Theranostic Applications.	**Master's Thesis Project** **Mentor- Dr. Avanish Singh Parmar**	**3 Semesters- Ongoing** **(Jan 2025 - May 2026)**
· Highly Cationic Lysozyme functionalized carbon nanodots as Antibacterial Agents. · LZM-CQD/Cellulose Membrane as Antifungal, Antimicrobial and Biodegradable food packaging. · Application of MIP coated bio-nanodots in fluorometric sensing of dopamine.		
Investigating the Piezoelectricity of Amyloidogenic Hydrogel for Biomedical Applications.	**Research Project** **Mentor- Dr. Avanish Singh Parmar**	**2 Semesters- Ongoing** **(July 2024 - May 2025)**
· To investigate the piezoelectric property of lysozyme hydrogel for diabetic wound healing and bone regeneration applications. · To study the potential of the hydrogel scaffold in drug delivery applications through drug release studies. · Evaluation of the biomedical characteristics of the composite hydrogel, including its biocompatibility, 3D printability, antioxidant and antibacterial activities, and its potential for tissue engineering, skin regeneration, cancer treatment and bone regeneration.		
ML Model for classification of diabetic wound images.	**Undergraduate Project** **Mentor- Dr. Avanish Singh Parmar**	**2 Semesters** **(Jan 2024 - Nov 2024)**
· Diabetic wound image data collection in collaboration with various hospitals and doctors. Cleaning and processing of collected data. · Creating an ML model that can distinguish diabetic and non-diabetic wounds and classify the diabetic wounds according to their wound severity stage. · Developing a mobile application that can take pictures of a patient's wound, process it using the created ML model, and show the results.		

Positions of Responsibility

Awards and Achievements

2023-24 **Joint Secretary**, IIT BHU Quiz Club.

2024 **Volunteer, organizing team**, TransMat 2K24: Translational Materials for Sustainable Technology, Department of Physics, IIT (BHU).

2023-24 **Head**, Game Development Group, Club of Programmers, IIT (BHU).

2024 **Head, Design Team**, Jigyasa'24 (Annual Fest of Physics Department, IIT BHU.

Miscellaneous Experience

Awards and Achievements

- **Poster Presentation**, International Conference on Smart Materials for Sustainable Technology (SMST 2024), INST Mohali.
- **1st Runner-Up**, Debug-It Hackathon by Club of Programmers, IIT (BHU).
- **1st position**, Space-Time Showdown Game Jam of Jigyasa'24.
- **7th position**, IGDC Gamedev Challenge, Inter IIT Tech Meet 12.0, IIT Madras.
- **Silver Medal**, Open International Karate-Do Competition, Kolkata.
- **1st position**, Sci-Biz-Tech Quiz, Kashiyatra 2024 (Annual socio-cultural fest of IIT BHU).

Certification

- **Badge of Quantum Excellence**. Awarded by Qiskit Global Summer School 2023 by IBM.
- **Cryptography 1**. Awarded by Stanford Online and Coursera.