Khushi Wandile | **22B1285**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Female**
DOB: 17/03/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	-
Intermediate	CBSE	MKVVIV, Mumbai	2022	95.80%
Matriculation	CBSE	Ryan International School, Kandivali	2020	99.00%

Pursuing **Dual Minor** in **Computer Science** and **Artificial Intelligence & Data Science** at IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Secured an **All India Rank 1341** in **JEE Advanced** examination among **0.16 million** candidates *(2022)*
- Attained **99.68** percentile in the competitive **JEE Main** examination among **1 million** applicants *(2022)*
- Recipient of the prestigious **NTSE Scholarship** awarded to the **top 0.2 %** students of the country *(2020)*
- Achieved **Distinction** in **Australian National Chemistry Quiz** among **0.1 million** students *(2020)*
- Distinguished with **High Distinction** in **UNSW Global Australia** Assesment for Indian Schools *(2019)*
- Ranked **1 Internationally** with a perfect score in the **Mathematics Olympiad** conducted by SOF *(2018)*

PROFESSIONAL EXPERIENCE

AL/ML Intern | *Samespace Labs Pvt. Ltd.* *(Jun '24 - Jul '24)*

*Received a **Letter of Recommendation** from the Project Manager for exemplary performance*

- Developed an ASR system using **open-source models** to enhance the transcription accuracy in real-time
- Employed **byte-level manipulation** and **audio buffer** to reduce latency and enhance data throughput
- Designed comprehensive **data generation pipeline**, using Groq API and gTTS for synthetic data creation
- Fine-tuned **multilingual ASR** model on **Triton** Inference Server, significantly reducing word error rate

Embedded System Researcher | *MindWatt Industries Pvt. Ltd.* *(Jul '24 - Present)*

- Analysing performance of **neuromorphic chips**, comparing their processing speed with CPU and GPU
- Investigating the **energy consumption** of ANNs to identify power characteristics of hardware platforms
- Evaluating the benefits of **ASICs** for neural network models, focusing on the **efficiency** of chip designs

KEY PROJECTS

Real-Time Infrastructure Monitoring | *Smart India Hackathon, Govt. of India* *(Oct '23 - Dec '23)*

*Among the **top 1%** of the teams that qualified for the Grand Finale of the the National level hackathon*

- Implemented **Deep-Q Learning** algorithm to optimize real-time inventory tracking during construction
- Deployed spatial **data analytics** by integrating **ArcGIS** for optimal resource allocation and visualisation
- Devised a predictive model based on **Random Forest algorithm** forecasting project completion date
- Employed SQL queries and **database management** systems to analyze and enhancing decision-making

Audio Processing for Speech Recognition | *Summer of Code, Web and Coding Club* *(Jun '23 - Jul '24)*

- Engineered a speech recognition system utilizing **CNN** (Convolutional Neural Networks) in TensorFlow
- Analysed acoustic data parameters using **audio spectrograms** to enhance feature extraction accuracy
- Utilized **Fourier Transform** and **Mel Frequency Cepstrum** for feature extraction and visualisation

Student Satellite Program | *IIT Bombay* *(Apr '23 - May '24)*

A student team of 40+ members with vision of making IIT Bombay a centre of excellence in space technology
Faculty Advisor: Prof. Varun Bhalerao | Department of Physics, IIT Bombay

Cubesat-Power System | Electrical Subsystem

- Conducted rigorous testing of **MPPT algorithms** through simulation and hardware-in-the-loop testing
- Verified the control loop by simulating **transfer function** blocks on Simulink to optimize power conversion
- **Modelled sun sensor** by simulating Albedo effect on **MATLAB** to enhance accuracy of solar vector

Cubesat-Navigation | Instrumentation Subsystem

- Implemented **PCB design** and assembly of the prototype for attitude determination and **control system**
- Devised an **algorithm** and implemented in **python-pyfirmata** to obtain directional vector of nanosatellite

Low-Cost Spectrophotometer | *Planeterium, The Nehru Centre Mumbai* *(May '24 - Jul '24)*

*Received a **Letter of Recommendation** from the **Director** Prof. Paranjpye for exemplary performance*

- Designed and built adjustable spectrophotometer **prototype** in light-proof box for optimal image quality
- Deployed starlight transmission from telescope by integrating **optical fiber** to obtain **stellar spectrum**
- Analysed **spectral data** to identify elemental composition, Doppler shifts and other stellar phenomena

Neural Networks and Large Language Models | *Institute Technical Council* *(Apr '23 - May '23)*

- Employed **Skip-gram model** on a corpus, tracing similarities between the vector representations of words
- Used **cosine similarity** to measure the similarity between vector representations of generated words
- Applied fine-tuning of a **named entity recognition** model and deployed an app to interact with model

Stock Prices Prediction using LSTM | *Winter in Data Science, Analytics Club* *(Dec '23 - Jan '24)*

- Devised Stock Market Prediction system using **LSTM networks** to model dependencies in financial data
- Conducted **data pre-processing, cleaning**, and **transformation** to ensure high-quality input for LSTM
- Analysed **Moving Averages** and risk assessments by analysing **Daily Returns** to quantify volatility

Computing System IITB-CPU | *Course Project* *(Nov '23 - Dec '23)*

Faculty Advisor: Prof. Virendra Singh | Department of Electrical Engineering, IIT Bombay

- Developed 16-bit CPU by defining comprehensive states and **state transitions** to execute 15 instructions
- Delivered on the project's **ISA** (Instruction Set architecture) using **FSM** (Finite State Machine) Model
- Implemented **Instruction Memory** to enable instruction execution on integration with other components

Microprocessors Programming | *Lab Course* *(Jan '23 - Apr '24)*

Faculty Advisor: Prof. Nikhil Karamchandani | Department of Electrical Engineering, IIT Bombay

- Utilised **UART protocol** for **serial communication** between embedded system and external peripherals
- Implemented **watchdog timer mechanism** fortifying system reliability by monitoring program execution
- Designed digital **FIR filter** on microcontroller, using UART protocol and filter algorithm in embedded C

TECHNICAL SKILLS

Programming	C/C++, Embedded C, Python, VHDL, Bash, LaTeX
Software	LTspice, Github, Simulink, Quartus, Linux, AutoCAD, Eagle-PCB,
ML & Data Science	Keras, Pandas, NumPy, SciPy, PyTorch, Matlplotlib

KEY COURSES

Computer Science	Logic in Computer Science, Computer Programming, Introduction to ML
Electrical	Communication Systems †, EM Waves †, Electronic Devices and Circuits, Microprocessors, Control Systems, Digital Design, Analog Circuits, Signal Processing, Power Engineering
Other	Linear Algebra, Probability and Random Processes, Calculus, Economics

†*to be completed by Dec'24*

POSITION OF RESPONSIBILITY

Institute Internship Coordinator | *Placement Cell, IIT Bombay* *(May '24 - Present)*

- Establishing and retaining relations with leaders across **250+** companies and **50+** international universities
- Orchestrating institute-wide pre-internship talks, resume sessions, GDs, and interviews for **2500+** students

Technical Secretary | *Hostel Council, IIT Bombay* *(Aug '23 - Jun '24)*

- Organized technical events and competitions to foster a culture of **innovation** and **teamwork** in hostel
- Collaborated with **8+** clubs affiliated with the Institute Technical Council to organize technical events

EXTRACURRICULAR ACTIVITIES

Technical	· Awarded certificate of **merit** in **IOQM** (Indian Olympiad Qualifier in Mathematics) · Stood **2nd** in Mumbai with a score of 99% in Ignited Mind Lab Mathematics Contest
Culturals	· Completed a year-long course for **Flute** under **NSO** National Sports Organisation · Bagged **3rd place** amid 500 artists at Rotary Club of Bombay Painting Competition · Dedicated 8+ years to **keyboard** embracing both **classical and western music** genre
Leadership	· Honoured with **Ryan Star award** for **all-round performance** among 400 students · Hosted a session at the **Annual Ground Station Workshop** for **100+** enthusiasts