Pushkar Ravindra Yennawar
Mechanical Engineering
Indian Institute of Technology Bombay

22B2133
B.Tech.
Gender: Male
DOB: 19/08/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2026	
Intermediate	Maharashtra State Board	Shri. Dawale Jr. College	2022	87.00%
Matriculation	Maharashtra State Board	Jubilee English High School	2020	96.40%

Pursuing a Minor degree in **Computer Science** at IIT Bombay

Scholastic Achievements

- Secured an **All India Rank 627** in JEE Advanced 2022 among 0.15 million aspirants.
- Secured an **All India Rank 460** in JEE Mains with a percentile of **99.95** among 1 million aspirants.
- Received a perfect score of **100** percentile in Physics in JEE Mains, ranking among the top performers nationwide.
- Stood **1st** in the CodeGames v2 coding contest organised by the Web and Coding Club.
- Ranked **1st** in the District in the MTSE state-level examination in 9th grade conducted by the University of Pune.
- Secured a **5th** rank in the District and received a state-level scholarship in 8th grade for exceptional academic performance.
- Achieved a state rank of **161** in Maharashtra State for the NTSE Stage 1 examination.
- Secured an **All India Rank 1402** in Kishore Vaigyanik Protsahan Yojana (KVPY) in 12th grade.
- Reached an average typing speed of **120** words per minute in the top 200 words category on 10fastfingers.com.
- Rated **1774** (**3-star** Coder) at CodeChef with a global rank of **6004** and a country rank of **4811**.
- Rated **1623** (Blue Coder) at Codeforces and ranked **580** globally in Codeforces Round 957 (Div. 3).

Key Projects

Lunar Lander | **Self project** *July 2024*

Guide: Prof. Andrew Ng, Unsupervised Learning, Recommenders, Reinforcement Learning

- Developed and trained a reinforcement learning agent to autonomously land a lunar module using OpenAI's Gym Library, advancing skills in machine learning and simulation environments through extensive experimentation and optimization.
- Implemented the Deep Q-Network (DQN) algorithm to simulate the Lunar Lander, utilizing the Markov Decision Process, Bellman Equation, and Q, $\hat{Q}$ Neural Networks for stable convergence and effective learning in the simulation environment.
- Gained experience in implementing algorithms using mini-batches efficiently for complex simulations like the Lunar Lander.

Image Compression | **Self Project** *June 2024*

Guide: Prof. Andrew Ng, Unsupervised Learning, Recommenders, Reinforcement Learning

- Implemented the K-means clustering algorithm from scratch in Python and applied it to compress images effectively by reducing the number of colours in images to significantly enhance storage efficiency without compromising visual quality.
- Successfully compressed a high-resolution image by selecting 16 representative colours, reducing storage size significantly.
- Developed skills in image processing, including techniques for manipulating and analyzing image data using Python.
- Gained a deep understanding of the K-Means clustering algorithm, including its implementation and practical applications.

Movie Recommender | **Self project** *June 2024*

Guide: Prof. Andrew Ng, Unsupervised Learning, Recommenders, Reinforcement Learning

- Developed a content-based recommender system using neural networks to enhance item recommendations based on their features. Leveraged TensorFlow and scikit-learn for data preprocessing, feature engineering, and model development.
- Computed a matrix of distances between movies using trained movie feature vectors, enabling efficient and reusable recommendations without needing to retrain the model, thus enhancing recommendation accuracy and system performance.
- Generated predictions for existing users in a content-based recommender system, focusing on comparing predicted ratings with actual ratings for thorough evaluation, thereby improving recommendation accuracy and enhancing user satisfaction.

Hotel Management with Image Analysis | **Hackathon by D.J.Sanghvi College of Engineering** *March 2024*

- Designed and implemented a hotel management system using a neural network to assess room cleanliness and manage inventory, with focused expertise in hyperparameter tuning for achieving optimal model performance and accuracy.
- Utilized web scraping techniques to gather image data for training a neural network to identify clean and unclean rooms.
- Collaborated in a team of four, developing essential teamwork skills such as effective communication, precise task delegation, and adept conflict resolution, ensuring collective success in project development and delivery.

Physics Informed Neural Network for Lid Driven Cavity | ME228 Course Project *Jan 2024 - April 2024*
Guide: Prof. Alankar Alankar

- Led a project utilizing a physics-informed neural network (PINN) to analyze fluid dynamics in a lid-driven cavity, employing simulated data obtained from the SATANIC lab at IIT Bombay, which involved integrating fluid mechanics knowledge with advanced machine learning techniques to significantly enhance accuracy in predicting complex fluid behaviours.
- Spearheaded the comparison between the PINN and traditional neural network models, emphasizing rigorous evaluation methodologies to thoroughly assess predictive performance and computational efficiency under various conditions.
- Collaborated effectively in a cross-functional team of three, coordinating data acquisition efforts, managing model training workflows, and ensuring seamless integration of findings into comprehensive reports and presentations of the project.

Lights Out | Self Project *Dec 2022*

- Created an interactive Lights Out game using the Pygame Game Development Library, inspired by the 'Lights Off' Problem on CodeChef, demonstrating proficiency in game development, graphical display and user interface design.
- Integrated event handling for mouse clicks, interpreting user input to toggle cells within the grid accurately and implemented game logic to manage the toggling effect, ensuring adjacent cells are correctly updated and game rules are followed.
- Created welcome and congratulations screens using custom portraits made in Canva, integrating these images as background graphics for a personalized and engaging game interface that enhances user experience and visual appeal.

Technical Proficiencies

Programming Languages	C++, C, Python, HTML, CSS
Tools	SolidWorks, Fusion 360
Online Courses	Machine Learning Specialization (Coursera): 1) Supervised Machine Learning: Regression and Classification, 2) Advanced Learning Algorithms, 3) Unsupervised Learning, Recommenders, Reinforcement Learning

Position Of Responsibility

Teaching Assistant | Makerspace (MS101) *Jan 2024 - April 2024*

- Selected as a Teaching Assistant for the MS101 course for showcasing excellent skills and expertise in Fusion 360 software.
- Provided instructional support and guidance to students in hands-on projects involving design, prototyping, and fabrication of parts for the drone project in Fusion 360 software, fostering essential technical skills and practical knowledge.
- Demonstrated proficiency in project management, problem-solving, and technical skills essential for rapid prototyping and fabrication, and actively ideated and implemented robust safety measures for effective testing, validation, and deployment.
- Evaluated student projects, providing guidance to foster skill development, innovation, and continuous improvement.

Extracurricular

AlgoBulls Trading Competition | Analytics Club, IIT Bombay *Sept 2023*

- Worked collaboratively in a team of 3 and built a strategy with the template codes to generate virtual profits.
- Supported teammates during high-pressure situations, fostering a sense of unity and camaraderie within the group.
- Played a key role in problem-solving activities, working collaboratively to address challenges and find innovative solutions.
- Actively participated in group discussions and decision-making processes, showcasing a commitment to shared objectives.

XLR8 | Electronics and Robotics Club, IIT Bombay *Jan 2023*

- Collaborated in a team of 4 to build and deploy a joystick-controlled rover bot, taking a lead role in developing and implementing logic in the deployed code, showcasing expertise in robotics, teamwork, and project management.
- Controlled the bot on the track for the XLR8 competition at IIT Bombay, demonstrating proficiency in robotics, real-time decision-making, effective competition strategy, and precise execution of manoeuvers under competitive conditions.

Organizer | Mood Indigo, IIT Bombay *Dec 2022*

- Demonstrated expertise in handling diverse settings of the fashion show event, managing the backdrop changes proficiently to enhance event aesthetics ensuring seamless transitions between segments and an optimal presentation.
- Collaborated and worked closely with the coordinator to ensure smooth guest interactions, emphasizing respect for authority and commitment to responsibilities and also maintaining clear communication with the event staff.

EnB Buzz | E-Cell, IIT Bombay *Dec 2022*

- Worked in a team of 3 and collaborated closely within the team to achieve project goals and deliver outstanding results.
- Demonstrated a commitment to continuous learning and professional growth by actively seeking opportunities to expand knowledge and skillset in PowerPoint, showing eagerness to learn and adapt to new skills.
- Utilized visual aids and storytelling techniques to engage and educate audience members, receiving positive feedback for clarity and impact.