

# SHVETANSHU GUMMA

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I am a Graduate Machine Learning Developer with a variety of experience from industrial exposure and detailed projects to pursue roles of similar capacity. With an academically accomplished MSc degree from renowned University of Bath, UK, and an avid researcher, I bring a strong sense of novelty, perfection, and attention to detail to my approach in building AI and ML solutions for a variety of applications. Leveraging my multidisciplinary skills in Game Development, Web Development, Database, and Software Engineering, with a strong passion for automation and eagerness to learn more, I am sure to successfully adapt and utilise my skillset to its fullest.

## EDUCATION

### University of Bath

October 2023 – October 2024

*Master of Science, Computer Science*

*Bath, Somerset, UK*

- First Class Honours (Distinction)
- **Subjects:** Functional Programming, Artificial Intelligence, Reinforcement Learning, NoSQL, MySQL, Automata Theory, Software Engineering Principles, Human Computer Interaction, Academic Writing

### Bennett University

August 2019 – August 2023

*Bachelor of Technology, Computer Science*

*Uttar Pradesh, India*

- 8.75/10 CGPA
- **Subjects:** Competitive Programming, Unity, OOPs, Game Development, UAV Development, DSA and Algorithms, Databases, Basics of Artificial Intelligence and Machine Learning, Web Development, Computer Networks, Cloud Computing

## PROJECTS

### YOLOv8 Image Detector | *YoloV8, OpenCV, PyQt, PyTorch, Numpy*

2025

- A detection, segmentation and pose estimation model with a working GUI leveraging PyQt on a windows system built using the YoloV8 model on an executable application.
- This application helps detect various objects such as humans, vehicles, animals, and other miscellaneous items from an uploaded image, video file or the system's camera leveraging OpenCV.

### Wordle | *Python, Numpy, Pandas, Torch, Pytorch, Gymnasium, Pygame, Time*

2024

- Using reinforcement learning to solve a custom Wordle environment based on the popular game Wordle. Our implementation uses the A2C algorithm, with a CNN being utilized to extract spatial information about colours and letters on Wordle grid.
- Our approach also uses RND to encourage the agent to visit unfamiliar states through an intrinsic exploration reward. Agent was trained over 80,000 episodes. After training, the agent was accruing rewards between 10.2 and 11.0, and this range is small enough to indicate a stable policy.

### Airline Delay Detection Model | *Python, Numpy, Pandas, Matplotlib*

2024

- An ML powered model to predict delayed airlines and aircrafts for smoother logistic and operational conditions for employees, ground crew, and customers.
- Built this project to better understand and experiment with multiple Supervised Machine Learning techniques. Achieved an F1 score of 0.89 with a custom random forest model, with multiple attempts using KNN, LR, and SVM powered models.

### Adventure Catto | *Lua, LOVE2D, Tiled, Winfall, Soren, Cupid*

2024

- A platform based original serious game built using Lua on LOVE2D and Tiled framework aimed at teaching young teenagers basics of coding in Python. Leveraged skills learned from the Jumper project.
- Used windfall library for world building and cupid library for debugging.
- Used this game as a testing environment to develop an agent to learn python by playing this game powered by Q-Table based reinforcement learning techniques.

## EXPERIENCE

### Student Teaching Assistant

June 2022 – July 2023

*Bennett University*

*Greater Noida, India*

- Taught OOPs using Java and C++, focusing on Inheritance, Abstraction and Encapsulation concepts, and singleton, factory and strategy design patterns.
- Mentor students on their personal C++ and Java projects, review code written by my students, and make sure students deliver high-quality code and assets that solve interesting problems.
- Founded and led the Bennett DroneSoc with over 120 members working at the forefront of Unmanned Aerial systems in Greater Noida.

## Research Assistant

*Bennett University*

**February 2022 – April 2023**

*Greater Noida, India*

- Facilitated further technical experimentation on the published research project "Efficient data management and control over WSNs using SDN-enabled aerial networks" enhancing a virtual topology predicated on the charge of WSN nodes utilizing software-defined networks (SDNs).
- Assisted in data transcription and coding of interviews using interpretative phenomenological analysis (IPA), contributing to advanced data analysis.
- Worked on an independent research project titled "Machine Learning based approach in Automating FPV Racing and Freestyle" and explored automated FPV drones.

## Software Development Intern

*Osmosys Software Solutions*

**March 2022 - June 2022**

*Remote, India*

- Worked on REST API to create services based on apps for front-end company webpage using Django REST framework and Python and tested on Postman to demo and share with clients.
- Developed alongside team members to integrate a ChatGPT API onto company's AI chatbot using a third party open source API framework.
- Developed multiple microservices and apps on Django, tested APIs, and reported results to supervisors.
- Collaborated with colleagues and project manager to work on an effective Agile (Scrum) process and teamed up in an XP fashion with co-developers. Participated in daily standup meetings and weekly Scrum meetings.

## Technology Associate

*Indian Flying Community*

**January 2020 - October 2022**

*Hybrid, New Delhi, India*

- As the a technology consultant for the startup, I was responsible for managing and updating firmware (iNav, Betaflight, KISS) on STM32 Arm based Flight Controllers and BLHeli based firmware on ESCs.
- Monitored, maintained and experimented on Proportional, Integral and Derivative values of new builds with minimum frame resonance while flight using Fusion 360. Instructed interns on clean builds and cable management.

## Front End Development Intern

*Defence Research and Development Organization, MoD*

**March 2021 - July 2021**

*Bangalore, India*

- Developed an automated form submission system using HTML, CSS and Java, increased the efficiency of form automation by 24 percent.
- Used XAMPP and MySQL to store form database and tie HTML with SQL on system server.
- Optimized our systems' response latency to act 120ms faster and followed strict Agile (XP + Scrum) Methodology throughout the development since the quality, demands, and questions of the forms are never static.
- Wrote an 24-page report and gave multiple presentations on-campus.

## RESEARCH

### Supporting Single Handed Control for Independent Movement of Each Axis in 3-D Space

2024

*University of Bath, UK*

- MSc dissertation research
- Supervisor: University professor (Dr. Ollie Hanton).
- Duties: Prototype Development, Participant Recruitment, Quality Assurance, Tool Administration, Academic Presentation.
- Tools: EdgeTX, ExpressLRS, DRL, ROS2, LuaScript, OpenTX, AutoCAD, MATLAB, Python, Overleaf.

### Machine Learning based approach in Automating FPV Racing Simulation

2023

*Bennett University, India*

- BTech Summer Break Independent Project (ongoing peer review).
- Supervisor: Independent Research (due help from Dr. Neeraj, HoD Research).
- Duties: Research Survey, Literature Review, Comparison Studies, Technical Testbed testing.
- Tools: Unity, LOVE2D, Lua, Betaflight BBL, CNN, DQN (RL), ROS2, Lua, Python, Microsoft Azure, Overleaf.

## ACHIEVEMENTS AND SOCIETIES

### Distinction, MSc Dissertation

2024

*University of Bath, UK*

### Harvard CS50 Game Development Course

2021

*Harvard University*

### Chancellor's Medal

2023

*Bennett University, India*

### Annual Project Showcase Winner

2023

*Bennett University, India*

## SKILLS

**Languages:** Python, Java, C/C++, MySQL, SQLite, JavaScript, HTML/CSS, Lua, Arduino

**Developer Tools:** VS Code, Unity, Visual Studio, PyCharm, Eclipse, Atom, Anaconda, Betaflight, Mission Planner, LOVE2D

**Libraries:** Pandas, NumPy, Keras, Matplotlib, Pytorch, Tiled, Winfall

**Research:** Overleaf, LaTeX, ChatGPT, ResearchGate, GoogleScholar

**Standard IT Tools:** Slack, MS PowerPoint, MS Word, MS PowerBI, MS Excel, Linux Terminal (Ubuntu)