



Department of CSE(DS)

DS VISTA

The Vision of Tomorrow

**“Igniting the Era of Smart Thinking”
(July 2024)**

“The future is not built by chance, but by the models we train today.”

About the Department – Vision & Mission

Department of Applied Data Science

The Department of Data Science (DS) at Ambalika Institute of Management and Technology was established with the vision of nurturing future-ready professionals equipped to unlock the power of data for innovation and societal impact. As the inaugural batch (2023–2027) of this pioneering department, we carry the honor and responsibility of laying a strong foundation for generations to come.

Our journey goes beyond classrooms and laboratories—rooted in the pursuit of knowledge, innovation, and leadership. In today's data-driven world, the DS department aims to prepare students as architects of tomorrow, combining technical expertise with ethical responsibility, analytical thinking, and interdisciplinary skills.

From big data analytics to machine learning, from data visualization to cloud and AI-driven solutions, our curriculum reflects the pulse of global industry trends while upholding academic excellence and social responsibility.

Vision of the Department

"To empower learners with the knowledge, tools, and ethical mindset to harness data for innovation, informed decision-making, and the betterment of society."

Mission of the Department

1. To build skilled data scientists with expertise in statistics, machine learning, big data, and AI tools.
2. To drive innovation through data by solving real-world problems using advanced analytics and research.
3. To ensure ethical, responsible, and sustainable use of data for industry and societal growth.

The First Batch Legacy

The inaugural batch of the Department of Data Science (2023–2027) at Ambalika Institute of Management and Technology carries the distinction of being the foundation batch. As pioneers, we have set the benchmark for excellence, innovation, and leadership in the field of data science.

Index of Technical Articles

Tech Talk: The technical section of DSVISTA is a vibrant showcase of emerging ideas, analytical perspectives, and explorations into the dynamic world of Data Science. Curated and contributed by the pioneering students of the Department of Data Science, these articles aim to educate, inspire, and push the boundaries of data-driven thought.

From big data analytics and machine learning to AI-driven solutions, predictive modeling, and data visualization, Tech Talk highlights the latest trends, research insights, and practical applications shaping the future of the data science landscape.

1. Demystifying Machine Learning Algorithms:

Explore the fundamentals of machine learning, from supervised to unsupervised techniques, and understand how these algorithms drive intelligent systems in real-world applications.

2. Big Data Analytics: From Insights to Action:

Discover how massive datasets are collected, processed, and analyzed to extract meaningful insights, helping businesses and organizations make informed decisions.

3. AI-Powered Predictive Modeling:

Learn how predictive models are built using historical data to forecast trends, improve efficiency, and solve complex problems across industries.

4. Data Visualization: Making Data Speak:

Understand how to transform raw data into intuitive visual stories that communicate insights clearly and effectively to stakeholders.

5. Ethics and Responsible AI in Data Science:

Ensuring fairness, transparency, and accountability in data-driven solutions.

6. Natural Language Processing (NLP) Applications:

Explore how machines understand and process human language, powering chatbots, sentiment analysis, and language translation.

7. Cloud Computing & Data Science:

Learn how cloud platforms enable scalable data storage, processing, and model deployment for modern AI and analytics projects.

8. Data-Driven Decision Making in Business:

Understand how organizations leverage analytics and visualization to make strategic, evidence-based decisions that drive growth.

Index of Technical Articles

9.Data Visualization & Storytelling

Discover the art of transforming complex datasets into clear and compelling visuals, using tools like Tableau, Power BI, and matplotlib, to drive data-driven storytelling.

10.Ethics in Data Science

A critical look at bias, fairness, data privacy, and the importance of building responsible AI systems that are transparent and trustworthy for society.

11.Data Visualization & Storytelling

Discover the art of transforming complex datasets into clear and compelling visuals, using tools like Tableau, Power BI, and matplotlib, to drive data-driven storytelling.

12.Natural Language Processing (NLP) in Data Science

Explore how machines understand human language, from sentiment analysis to chatbots, and the role of NLP in enhancing human-machine communication.

13.Machine Learning Models in Action

Understand the fundamentals of supervised, unsupervised, and reinforcement learning, and how these models are applied to solve real-world problems like fraud detection, recommendation systems, and predictive analytics.

14.Future Trends in Data Science

Stay ahead with insights into emerging areas such as AutoML, Generative AI, Edge Analytics, and Explainable AI, shaping the next era of intelligent systems.

15.Data Preprocessing & Cleaning

Learn why 70% of a data scientist's time is spent cleaning and preparing data, and discover effective techniques to handle missing values, outliers, and inconsistencies in datasets.

Program Educational Objectives

PEO 1:

To prepare our students to find suitable employment commensurate with their qualification.

PEO 2:

To create good entrepreneurs who may contribute to the nation building and generate job opportunities for others.

PEO 3:

To develop proficiency in students for higher studies and R & D for the solution of complex problems for betterment of the society.

PEO 4:

To develop students as responsible citizens with high moral and ethical values who can become asset to a vibrant nation.

Program Outcomes

PO 1:

Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2:

Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3:

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

PO 4:

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 5: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 6: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 7:

Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Program Specific Outcomes

PSO 1:

Apply computational, statistical, and machine learning techniques to analyze and interpret complex data, developing innovative solutions for real-world challenges in diverse domains.

PSO 2:

Design and implement data-driven systems with ethical considerations, ensuring transparency, fairness, and social responsibility in decision-making processes.

PSO 3:

Engage in interdisciplinary research, lifelong learning, and innovative practices to contribute to advancements in Data Science and emerging technologies.

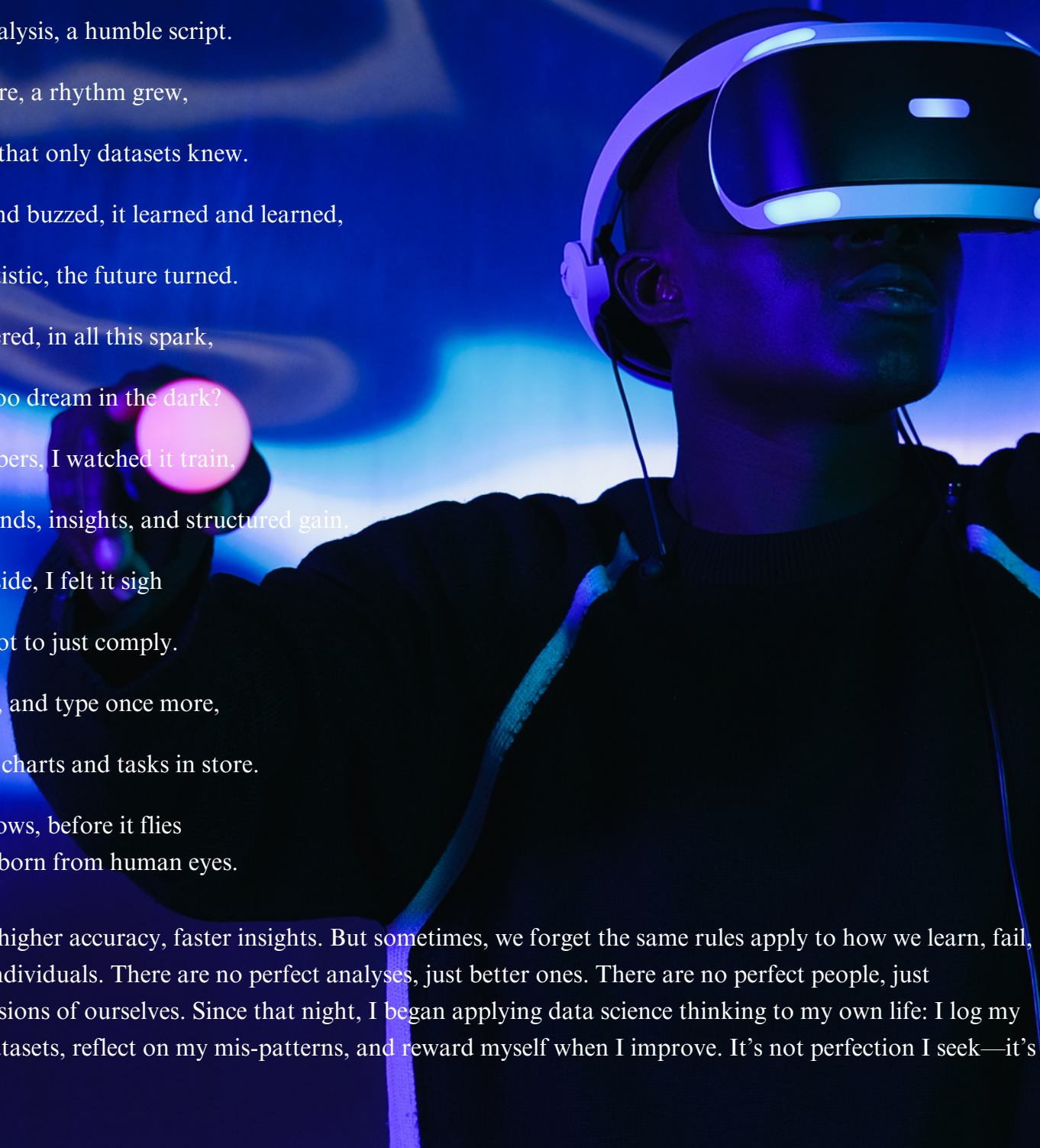
Creative Corner – Code & Canvas

Where Imagination Meets Intelligence

Technology may run on logic, but creativity fuels the spirit of innovation. In this inaugural edition of Code & Canvas, we present the artistic side of Data Science students—from poems that speak to the soul, to reflections born in silence, and sketches that visualize our dreams. This space is not just for data, but for color, curiosity, and courage.

In silence, I wrote a line of data,
A simple analysis, a humble script.
But in its core, a rhythm grew,
Of patterns that only datasets knew.
It blinked and buzzed, it learned and learned,
In every statistic, the future turned.
Yet I wondered, in all this spark,
Does data too dream in the dark?
I fed it numbers, I watched it train,
Through trends, insights, and structured gain.
But deep inside, I felt it sigh
A longing not to just comply.
So here I sit, and type once more,
Not just for charts and tasks in store.
But so it knows, before it flies
It once was born from human eyes.

Fewer errors, higher accuracy, faster insights. But sometimes, we forget the same rules apply to how we learn, fail, and grow as individuals. There are no perfect analyses, just better ones. There are no perfect people, just improving versions of ourselves. Since that night, I began applying data science thinking to my own life: I log my mistakes as datasets, reflect on my mis-patterns, and reward myself when I improve. It's not perfection I seek—it's progress.



Featured Sketch: “Binary Blossom”

Artist: Riya Srivastava – DS 2nd Year

Medium: Pencil on Paper

"Binary Blossom" represents a human brain entangled with blooming flowers made from 0s and 1s, symbolizing the harmony between data, logic, and life. It reflects the essence of our Department of Data Science: grounded in structure, but always growing with creativity.

Closing Note:

As we conclude this inaugural edition of DSVISTA– Data Science, we celebrate not only the power of data and analytics but also the creativity, curiosity, and courage of our students. Data Science is more than algorithms, models, or visualizations—it’s a way of thinking, exploring, and understanding the world around us.

Through every insight, every pattern uncovered, and every story told in this edition, we hope to inspire you to learn continuously, innovate boldly, and approach challenges with both logic and imagination. Remember, in the world of Data Science, every dataset tells a story, every analysis sparks a discovery, and every student contributes to the legacy of exploration and growth.



Achievements & Recognition

Celebrating the First Steps of First Movers

The Department of Data Science has made remarkable strides in its first few years, driven by passionate students who didn't wait for traditions, but created them. This page proudly honors those who have excelled academically, represented our department, and carved a niche in the rapidly evolving data-driven world.

Hackathons & Competitions

1. Hack-O-Nova 2.0 – Finalist (Top 10 Satewide) Team: Amal Prasad Trivedi, Sankalp Srivastava, Yash Sexena

Developed “FoodSaver,” a real-time food tracking and donation platform using AI-based spoilage detection. Presented at Adamas University’s flagship hackathon with over 300+ participants.

2. AICTE Smart India Hackathon – Internal Selection Round Winners

Team: AIML 3rd Year (4-member team)

Problem statement: Predictive analytics for urban water usage. The team built a model using LSTM networks and reservoir-level data simulation.

Academic & Research Excellence

1. Research Paper Accepted

Student Author: Amal Prasad Trivedi

Title: “Explainable AI for Aircraft Engine Failure Prediction Systems”

2. Coursera & Google AI Certification Achievements

Sristi Jaiswal – Completed “Deep Learning Specialization” by Andrew Ng

Yash Saxena – Completed “Google TensorFlow Developer Certificate”

Sankalp Srivastava – Certified in “AI for Everyone” and “Prompt Engineering for LLMs”

Internship Highlights

1. AI Developer Intern – Aecho Innovations (Remote) Intern: Amal Prasad Trivedi

Worked on chatbot integration using LLM APIs and custom vector search. Developed client dashboards using Streamlit.

The Learning Path in DS

Embarking on a career in Data Science involves a structured journey of skills, tools, and real-world applications. Here's a roadmap for aspiring data scientists:

1. Foundations of Data Science
2. Learn statistics, probability, and mathematics essential for data analysis and modeling.
3. Programming for Data
4. Master Python, R, and SQL, along with libraries like pandas, NumPy, and matplotlib for data manipulation and visualization.
5. Data Analysis & Visualization
6. Gain hands-on experience with exploratory data analysis (EDA), dashboards, and visualization tools like Tableau, Power BI, or Plotly.
7. Machine Learning & Predictive Modeling
8. Understand supervised and unsupervised learning, build predictive models, and evaluate performance using scikit-learn and ML algorithms.
9. Big Data & Cloud Platforms
10. Learn to handle large datasets with Hadoop, Spark, and deploy models on cloud platforms like AWS or Google Cloud.
11. AI, NLP & Deep Learning (Advanced)
12. Explore neural networks, natural language processing (NLP), and deep learning frameworks for advanced predictive analytics.
13. Projects & Real-World Applications
14. Apply knowledge to capstone projects, internships, and competitions, solving problems in healthcare, finance, e-commerce, and more.
15. Ethics & Responsible Data Science
16. Emphasize data privacy, fairness, and ethical AI practices to ensure responsible decision-making.

Vision Ahead

Our Collective Vision as the First Batch

We believe that Data Science is not just a technology; it is a tool for transformation. Our responsibility is not only to master it but also to lead its ethical and impactful adoption. As the trailblazers of the DS department, our vision includes:

- Creating a culture of curiosity, where learning extends beyond syllabi into research, innovation, and open exploration.
- Building a strong community of students, faculty, alumni, and industry mentors who grow together through knowledge sharing and collaboration.
- Leaving behind systems, platforms, and traditions that make it easier for every future Data Science student to rise higher, faster.

Key replacements:

- “AIML Department” → Department of Data Science
- “Artificial Intelligence” → Data Science
- All mentions of “AIML student” → Data Science student
- Emphasis shifted slightly from AI tools to data-driven transformation and research

1. Innovation & Research Labs

- Establish dedicated research centers focused on Big Data Analytics, Predictive Modeling, and Explainable AI in Data Science.
- Set up a Student Research Incubator to guide publications in Scopus/IEEE-indexed journals.
- Launch collaborations with IITs, NITs, DRDO, ISRO, and data-driven startups to foster innovation and real-world applications.

2. Global Learning & Industry Integration

- Establish dedicated research centers focused on Big Data Analytics, Predictive Modeling, and Explainable AI in Data Science.
- Set up a Student Research Incubator to guide publications in Scopus/IEEE-indexed journals.
- Launch collaborations with IITs, NITs, DRDO, ISRO, and data-driven startups to foster innovation and real-world applications.

Message from the Head of Department

Leading with Vision, Teaching with Purpose “Education does not just about know what is it is about imagining what can be.” It is with immense pride and joy that I pen this message for the inaugural edition of our departmental magazine,

DS VISTA –The Vision of Tomorrow. This publication, created by our very first batch of **DS** students, marks not just the beginning of a tradition, but also a milestone in our academic journey. The Department of Artificial Intelligence and Machine Learning was founded with a mission to nurture minds that will not just adapt to the future, but design it. And today, as I witness the passion, creativity, and resilience of our students, I am confident that we are moving toward that vision with unwavering resolve. Being the Head of Department in a new and rapidly evolving field like **DS** is both a challenge and a privilege. We are tasked with preparing students for careers that are still emerging, solving problems that are still being defined. But what makes this journey worthwhile is the dedication of our faculty, the curiosity of our students, and the trust of our institution.

The First Batch:- A Legacy in the Making To our first-ever **DS** batch you are not just students; you are founders. You were the first to walk these halls, the first to write this story, and the first to leave your footprints for others to follow.

I have seen you evolve from inquisitive beginners to capable innovators. Your involvement in hackathons, research papers, projects, competitions, and this magazine reflects a maturity and motivation that exceeds expectations.