



October 2021 | Volume 1 | Edition 2

AIML INSHORTS

Department of Computer Engineering with Specialization in AIML

CONTENTS

1. Department Vision and Mission
2. Add on MM Course
3. AIML Program Outcomes (POs)
4. AIML Program Specific Outcomes
And PEOs
5. AI Realm
6. Man Vs Machine
7. Facts and Games
8. Reach Us



**YOU WILL NEVER REACH
YOUR DESTINATION IF
YOU STOP & THROW
BISCUITS AT EVERY DOG
THAT BARKS... BETTER
KEEP THE BISCUITS &
MOVE ON**

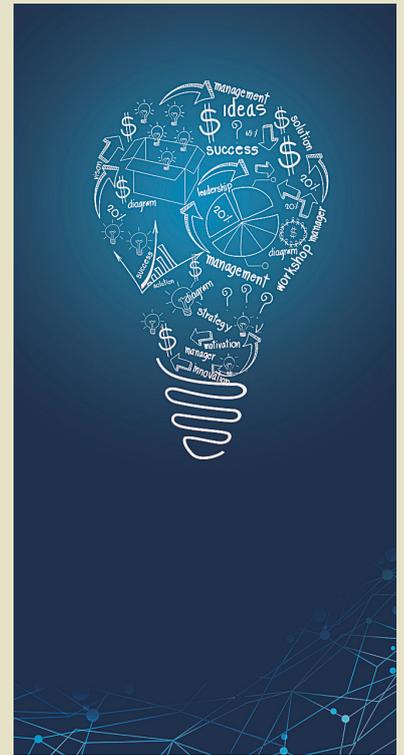
- Dhirubhai Ambani



DEPARTMENT VISION AND MISSION

VISION

To be a department focused on quality education and research in Artificial Intelligence & Machine Learning that prepares early professionals contributing to serve the society.



MISSION

To provide an academic environment for the development of professionals in the field of Artificial Intelligence and Machine Learning.

To cultivate research culture resulting in knowledge and development of the society.

To enhance academic collaborations for better exposure.





ADD ON MM COURSE

Add on Course **MATHEMATICAL MODELING**

WHAT YOU'LL LEARN

- Basics of Statistics and Probability
- Measures of Dispersion
- Correlation and Regression
- Basics of Linear Algebra

WHAT WILL YOU ACHIEVE

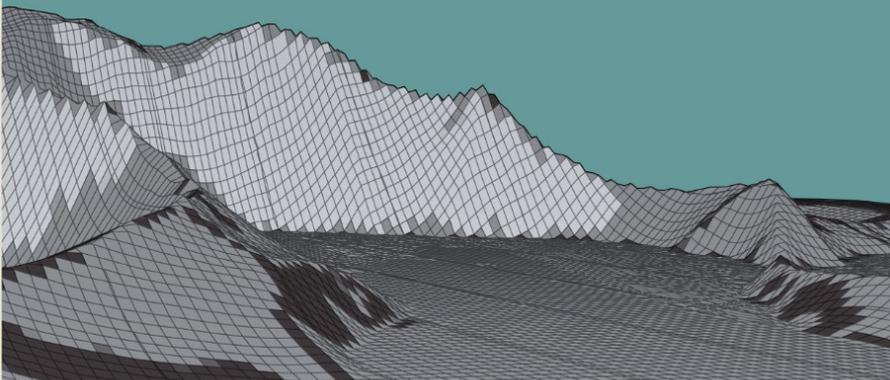
- Apply the concept of statistics to the engineering problems in data science, machine learning, and AI.
- Apply the concept of different regression models for computing data.
- Understand variety of real life probabilistic situations using assignment, transportation, travelling salesman techniques.
- Understand the application of linear algebra in data engineering, Machine learning, and AI.



DURATION of Program
 24 hours (online mode)



SEATS
 Open for all Second Year Engineering students of UCOE



Vidya Vikas Education Trust's
Universal College of Engineering
(Permanently Unaided | Approved by AICTE, DTE & Affiliated to University of Mumbai)
 Recognised as GUJARATI Linguistic Minority Institution | Accredited with B+ Grade by NAAC

DTE CODE: 3460

A solid foundation in mathematical knowledge is vital for the development of artificial intelligence (AI) systems. What are the key maths skills required to study machine learning, AI, and data science?

Who is the course for?

The course is ideal for anyone who wishes to learn the core mathematics techniques and concepts required to help with their career in AI, machine learning, and data science.

You may be planning to study in these areas, or you may be a student looking to improve your knowledge.

Who developed the course?

The course is developed by experienced Mathematics faculty, Department of AS & H and Department of AIML and Data Engineering, Computer Engineering and IT, Universal College of Engineering.



AIML PROGRAM OUTCOMES (PO'S)

PROGRAM OUTCOMES (POs)

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

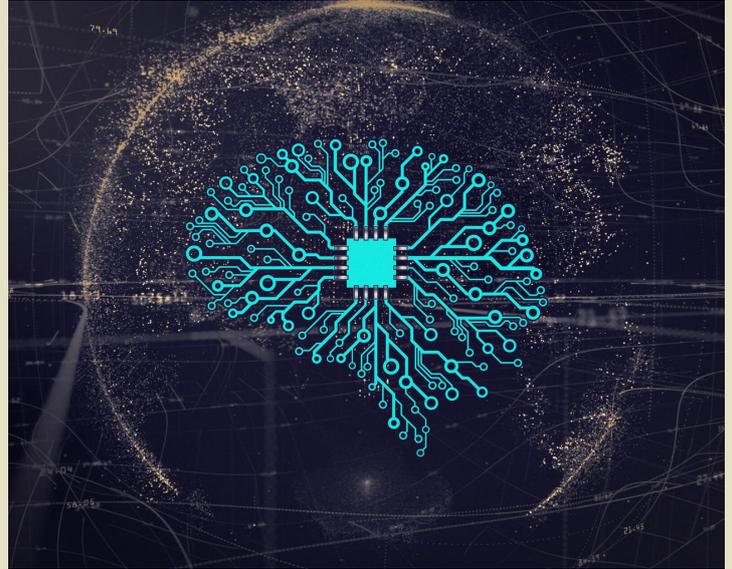
Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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 considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

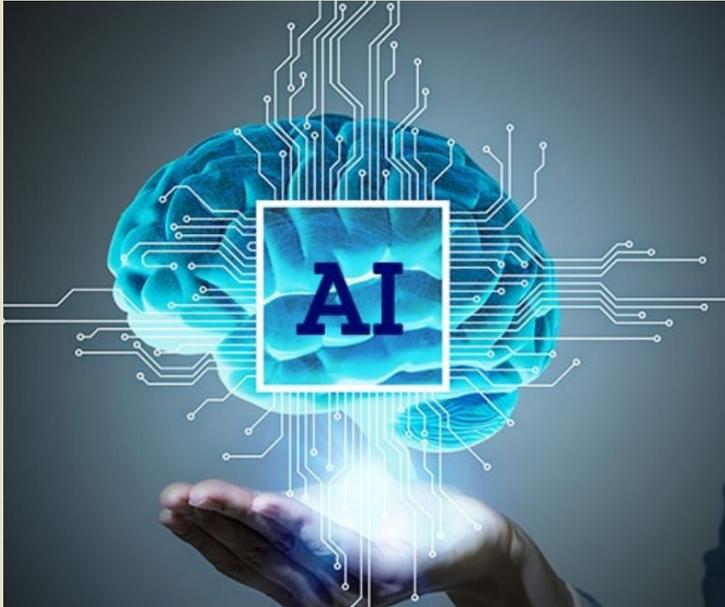
Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.





AIML PROGRAM OUTCOMES (PO'S) CONTD.



Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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

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.

Project management and finance: Demonstrate knowledge and understanding of the engineering 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.

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



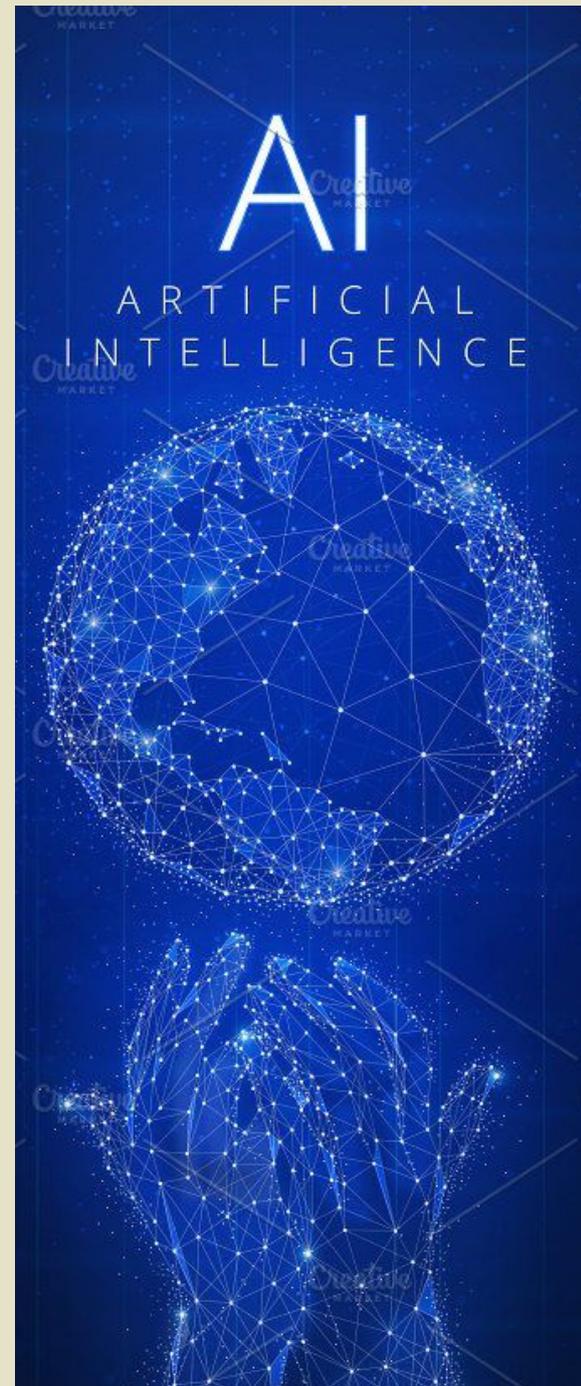
AIML PROGRAM SPECIFIC OUTCOMES AND PEO'S

Program Specific Outcomes (PSOs)

- **PSO-1:** Demonstrate the knowledge of human cognition, Artificial Intelligence, Machine Learning, and data engineering for designing intelligent systems.
- **PSO-2:** Apply computational knowledge and project development skills to provide innovative solutions.
- **PSO-3:** Use tools and techniques to solve problems in AI & ML.

Program Educational Objectives (PEOs)

1. To practice their profession with confidence by applying new ideas and technologies in the domain of Artificial Intelligence and Machine Learning for the sustainable growth of Industry & Society.
2. To pursue higher studies for professional growth with superior ethics and character.
3. To engage in research leading to innovations/products or become a successful Entrepreneur.



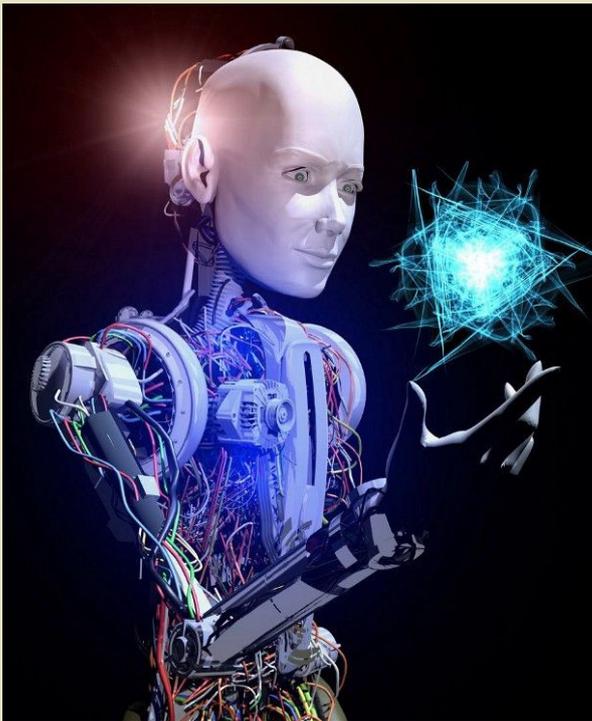


AI REALM

FUTURE OF AI

1. Fully automated driving and the rollout of robotaxis:

Autonomous driving technology continued to mature in 2020, with the industry's leading companies testing driverless cars and opening up robotaxi services to the public in various cities. Fully automated driving, which enables rides without a human safety driver on board, will be necessary for the scalability and commercialization of autonomous driving.



2. AI chips

AI hardware continued to develop in 2020, with the launch of several AI chips customized for specialized tasks. While an ordinary processor is capable of supporting AI tasks, AI-specific processors are modified with particular systems that can optimize performance for tasks like deep learning. As AI applications become more widespread, any increase in performance or reduction in cost can unlock more value for companies that operate a wide network of data centers for commercial cloud services, and can facilitate the company's internal operations.

3. Applied natural language processing

In 2020, natural language systems became significantly more advanced at processing aspects of human language like sentiment and intent, generating language that aligns with human speaking and writing patterns, and even visual understanding, meaning the capability to express understanding about an image through language. These natural language models are powering more accurate search results and more sophisticated chatbots and virtual assistants, leading to better user experiences and creating value for businesses.

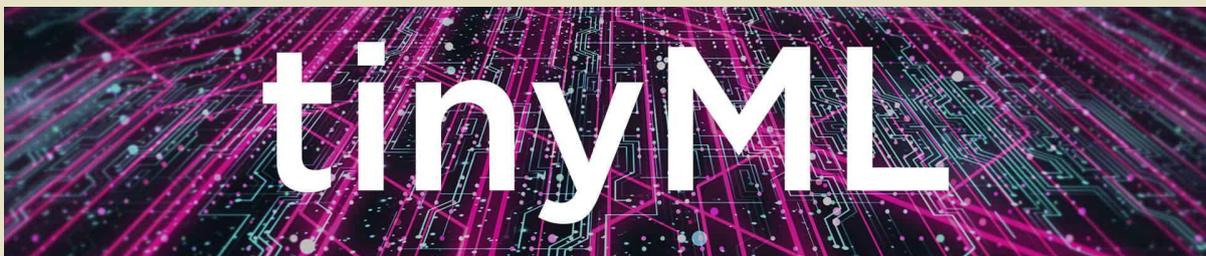
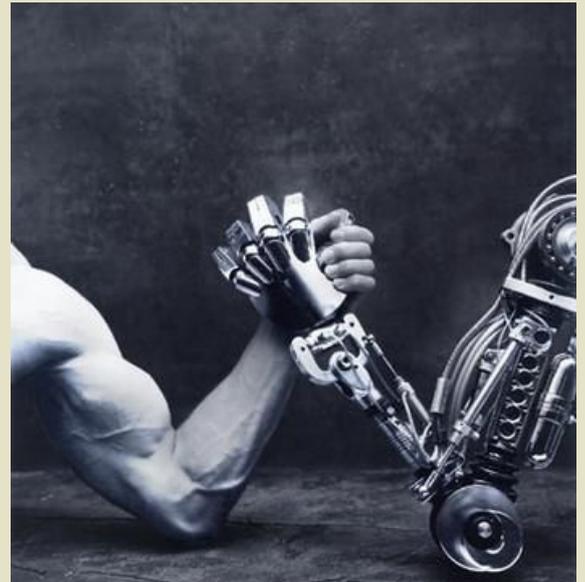
Courtesy- [technologyreview.com](https://www.technologyreview.com)



MAN VS MACHINE

MACHINE LEARNING TRENDS WITH TINYML

In a world increasingly driven by IoT solutions, TinyML makes its way into the mix. While large-scale machine learning applications exist, their usability is fairly limited. Smaller-scale applications are often necessary. It can take time for a web request to send data to a large server for it to be processed by a machine learning algorithm and then sent back. Instead, a more desirable approach might be to use ML programs on edge devices.



By running smaller scale ML programs on IoT edge devices, we can achieve lower latency, lower power consumption, lower required bandwidth, and ensure user privacy. Since the data doesn't need to be sent out to a data processing center, latency, bandwidth, and power consumption are greatly reduced. Privacy is also maintained since the computations are made entirely locally.

This trending innovation has a great deal of applications in sectors like predictive maintenance for industrial centers, healthcare industries, agriculture, and more. These industries utilize IoT devices with TinyML algorithms to track and make predictions on collected data. For example, Solar Scare Mosquito is an IoT project which uses TinyML to measure the presence of mosquitos in real-time. This can generate early warning systems for disease epidemics from mosquitos, for example.

Courtesy- mobidev



FACTS AND GAMES

AIML

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| S | K | R | O | W | T | E | N | L | A | R | U | E | N |
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| E | D | E | R | A | T | L | D | S | N | I | R | R | T |
| T | O | B | T | A | H | C | E | D | E | H | U | A | D |
| D | L | R | M | U | N | R | E | S | G | G | G | R | A |
| B | C | R | H | L | O | C | P | T | D | T | N | I | E |
| S | I | U | T | R | G | A | L | E | E | Y | C | A | S |
| W | T | O | I | T | H | N | E | C | T | S | R | N | E |
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CHATBOT
 DATA MINING
 DEEP LEARNING
 NEURAL NETWORKS
 PYTHON
 ALGORITHM
 CLUSTERING
 DECISION TREE
 HEURISTIC
 LOGIC

DID YOU KNOW?

Originally coined by John McCarthy in 1955, AI is a machine with the ability to solve problems, which usually are performed by humans using our natural intelligence. AI is used to build agents or robots, which can replicate human behavior and make decisions on our behalf



REACH US



ucoe.edu.in



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