



 Online

# MASTER OF SCIENCE IN APPLIED ARTIFICIAL INTELLIGENCE





## ABOUT UNIVERSITY OF SAN DIEGO

The University of San Diego, established over 70 years ago, is home to over 9,000 students. Its diverse and vibrant student community comes from 85 countries and 50 states in the USA. We are proud to offer a suite of online programs in engineering and tech to Indian students. With this unique opportunity, you can earn a technical degree from a U.S. without having to leave home and without sacrificing quality.

The institution holds the distinction of being one of the youngest private universities to feature in U.S. News and World Report's top 100 universities in the USA. Moreover, the University has achieved accolades for its online programs. The University has also been ranked #1 for having the most beautiful campus and #22 for providing the best career services by the Princeton Review.



## PROGRAM OVERVIEW

### At a Glance

USD Online's Master of Science in Applied Artificial Intelligence (MS-AAI) program for Indian students is designed to equip students with technical and soft skills for one of the most in-demand fields of today's tech revolution. The program is led by an expert Indian faculty and was developed by professionals with rich experience in domains spanning technology, engineering, and computer science.

Our curriculum introduces the students to the principles and applications of deep learning, neural networks, computer vision, natural language processing, and IoT (Internet of Things). The program also integrates the knowledge of privacy-maintaining techniques and socially responsible ethical practices while applying artificial intelligence tools. Students conclude the program with a capstone project that pairs students, instructors, and potential industry partners and tests their ability to apply their skills in the workplace.

 Online

**Program Length:** 20 Months

**Total Credits:** 30-36

### Quick Facts

Students have the opportunity to enroll in any of the three semesters: Spring, Summer, or Fall. Each semester holds two subjects lasting seven weeks each, allowing students to concentrate on one subject at a time.

**Top 100**

Universities in the  
Country  
U.S. News & World Report

**#2**

Most Beautiful  
Campus  
Princeton Review

**#54**

Best Value  
Schools  
Princeton Review





## WHAT WILL YOU LEARN?

The program provides individuals with the skills needed to effectively use advanced AI technologies in leading industries spanning operations, healthcare, defense, finance, and marketing. Graduates will be equipped to:

- Apply principles and techniques of AI, such as machine learning, computer vision, and NLP, for automated decision-making.
- Gain expertise in creating programs for data extraction and interfacing with databases.
- Use comprehensive knowledge of IoT, which has numerous applications in smart homes, self-driving cars, and other areas.
- Apply privacy-preserving techniques and socially responsible practices to the dissemination and analysis of data.
- Effectively lead in articulating the value of AI-based systems for organizations.



## PROGRAM EXPECTATIONS

As postgraduate students at a top-tier US university, a rigorous curriculum, independent research, critical thinking and a high level of accountability are to be expected out of all of our programs. Students should expect and prepare for the following:

- 15-18 hours per week on average to commit to studying and completing assignments. This may vary by the student's personal background and the content of the weekly syllabus.
- Complete work independently on their schedule supplemented by the resources available in the online classroom.
- Look externally to find supplemental information to help them complete assignments and understand course content.



## WHY CHOOSE USD ONLINE?



### Equivalent Value and Same Curriculum as On-campus Degree

Online graduate students earn the same degree as campus-based students. The online mode provides students with the same industry-driven curriculum and academic rigor as the University of San Diego's on-campus degree programs.



### Cutting Edge Tech-focused Curriculum

Join this opportunity to earn a tech degree from a U.S. university. Our innovative, practical curriculum introduces the latest concepts and trends from the global tech landscape, aligning it with industry requirements.



### Attend Graduation Ceremony on Campus

All online students have the opportunity to attend their graduation ceremony at their own expense. Visit our state-of-the-art, historical California campus and join the excitement and celebrations alongside other USD graduates.



### Advanced Learning Resources

Gain access to a robust digital ecosystem designed to enhance your learning experience. Utilize Canvas for coursework and engage with faculty and peers via Zoom. Collaborate seamlessly with industry-standard tools like Google Suite and Microsoft Office 365.



### USD's Career Center & Handshake

Our Career Development Center is here to guide you through job and internship applications, offering mock interview preparation, resume-building tools, and personalized career advice. As a USD student, you'll also have access to Handshake, a platform designed to connect you directly with top employers and internship opportunities in your field, all with the support of our expert advisors.



### Dedicated Support

Get access to academic advisors, engage with expert faculty for guidance, and receive dedicated assistance to help you stay on track. Our support system ensures that online students receive the same level of mentorship and engagement as on-campus learners.





## WHY STUDY A MASTER OF SCIENCE IN APPLIED ARTIFICIAL INTELLIGENCE?

### Potential Careers

The program is an ideal launchpad for graduates to work in one of the world's fastest-growing domains in high-impact industry positions such as:

- AI Engineer
- Machine Learning Engineer
- Natural Language Processing Scientist
- Robotics Engineer
- Software Engineer
- Software Developer
- Computational Linguist
- Human-Centered Machine Learning Designer
- NLP Engineer
- Computer Vision Engineer
- Algorithm Engineer
- Big Data Engineer

### Industry Insights

51.8%

The AI market share of the IT services industry in India

US\$15.7 Trillion

AI's predicted contribution to the global economy by 2030

INR 1 Million

Average annual salary of an AI Developer in India

Sources: PwC, Statista.com, Glassdoor.com

### Where MS-AAI Graduates Work





## ALUMNI BENEFITS AT THE UNIVERSITY OF SAN DIEGO

At the University of San Diego, our commitment to alumni extends well beyond graduation. Explore the following diverse benefits designed to foster continuous connection, active engagement, and unwavering support within the esteemed Torero community.

- **Stay Updated with Monthly eNewsletter:**

Receive our vibrant monthly eNewsletter, keeping you in the loop with the latest happenings, alumni stories, and upcoming events.

- **Connect Anytime with the Torrero Network**

Explore our dynamic alumni website, your go-to-hub for staying connected, accessing resources, and discovering opportunities within the USD community.

- **Local Torrero Clubs for Community Building:**

Build or join local Torrero clubs to connect with alumni in your area, fostering a sense of community and shared Torero pride.

- **Networking Made Easy on Alumni Portal:**

Engage in meaningful networking within our alumni portal, connecting with fellow alumni to share experiences, insights, and career opportunities.

- **Virtual Events for Continued Learning:**

Attend our virtual events, including the ongoing personal finance series addressing navigating inflation. Stay informed, inspired, and connected from the comfort of your home.

- **Alumni Member Card Upon Graduation:**

Upon graduation, sign up to receive your Alumni Member Card, unlocking exclusive privileges and access to various benefits on-campus and local benefits.

- **Explore Job Opportunities on Handshake:**

Sign up for Handshake, our job listing platform, to explore a myriad of career opportunities tailored for USD alumni.

- **T.E.A.M. for Networking and Mentorship:**

Join T.E.A.M., our exclusive private social networking site, to find mentors, explore job listings, share expertise, and make valuable connections within the USD community.

- **Access Online Library Resources:**

Enjoy continued access to certain online library resources, supporting your intellectual curiosity and lifelong learning.

- **Discount on Professional Development Courses:**

Benefit from a 25% discount on select professional development courses and continuing education courses, enhancing your skills and advancing your career.







## ADMISSIONS AND ELIGIBILITY

### Admissions

Admissions are processed on a rolling basis in August, December and April. To see more information on start dates, please visit our website.

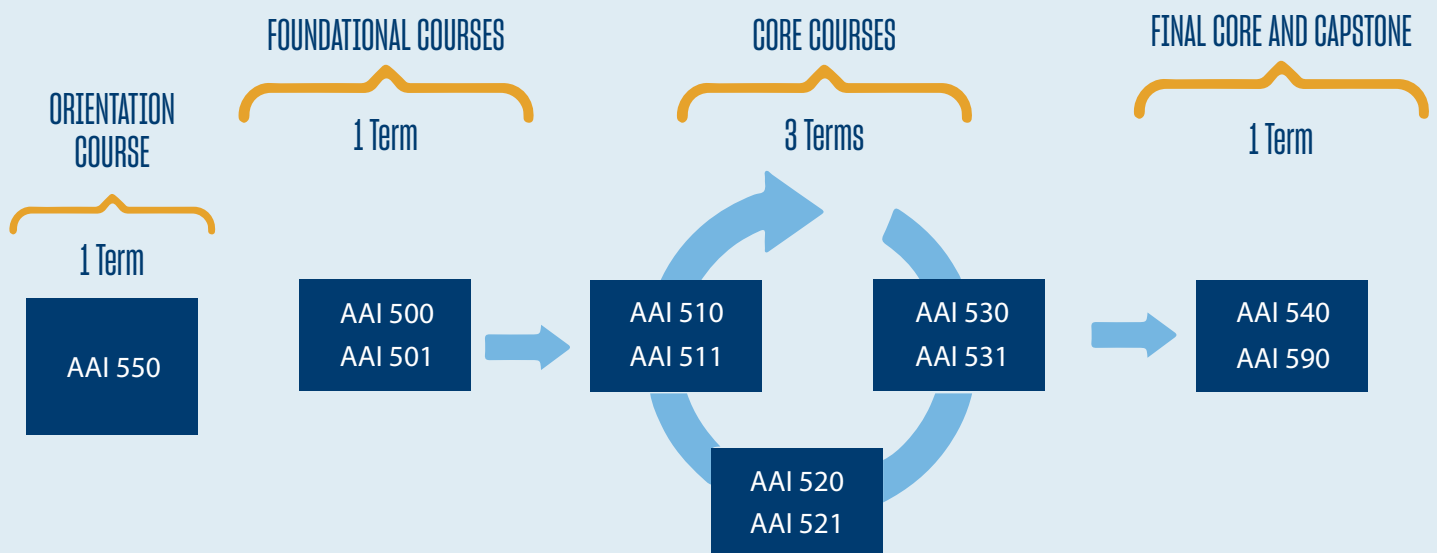
### Eligibility

- Must be a resident of India.
- Must be proficient in English.
- Must submit an Aadhaar card or PAN card.
- Must hold an undergraduate degree:
  - 4-year undergraduate degree holders must have their degree issued from an accredited university (NAAC, UGC or AICTE) and earned a designation of Second Division or higher (45% or above).
  - 3- year undergraduate degree holders must have their degree issued from a NAAC accredited university with a letter grade of A or higher and earned a designation of First Division (60% or above).
- **Proof of English proficiency if necessary\***
  - \*Applicants are required to provide evidence of English language proficiency to be considered for admission and can prove eligibility as follows:
    - Successful completion of an undergraduate degree with the medium of instruction in English. Evidence must be provided on the marksheet/transcript or student must provide a medium of instruction letter from the university.
  - OR
  - If the medium of instruction for the undergraduate degree is not English, student must submit evidence of completing an approved English language proficiency test. Score requirements listed below:

TEST NAME	SCORE REQUIRED
IELTS Academic	7.0
TOEFL iBT	83
Duolingo English Test	120



## CURRICULUM



### ORIENTATION COURSE

#### AAI 550 - New Student Orientation

Besides introducing students to the University of San Diego, the orientation course provides vital information about the MS-AAI program and all the technologies they will learn as part of the program.

During the course, students will learn to navigate the learning environment and successfully locate helpful resources. Students can use this course as a reference tool throughout the program tenure.

## FOUNDATIONAL COURSES

### AAI 500 - Probability and Statistics for Artificial Intelligence

This course introduces students to concepts of probability and statistics and their application, besides an introduction to coding in Python. It imparts a strong foundation to random and multivariate variables, data and sampling distributions, descriptive statistics, and hypothesis testing.

Other topics covered include the numerical and graphical description of data, elements of probability, sampling distributions, probability distribution functions, and hypothesis tests.

This course will combine the learnings from texts, case studies, and standard organizational processes with practical problem-solving skills for the real-life workplace. Finally, students will learn team collaboration, professional presentation, and academic writing through a team project.

### AAI 501 - Introduction to Artificial Intelligence

This course introduces students to the fundamental principles, techniques, and applications of AI, machine learning, and natural language processing through diverse topics, including heuristic search and optimization techniques, genetic algorithms, machine learning, neural networks, and natural language understanding.

It also covers extensive applications of AI, including computer vision, pattern recognition; image processing, IoT, and robotics.

## CORE COURSES

### AAI 510 - Machine Learning: Fundamentals and Applications

During this course, the students will get a deep understanding of the fundamental concepts of algorithms for machine learning.

They will also acquire knowledge in supervised and unsupervised learning techniques such as hidden Markov models, support vector machines, clustering, and dimensionality reduction using Python.

Students will also get a deep understanding of the use of ethics and legal principles in machine learning, including concepts covering dehumanization effects and amplification of human biases that are transferred into training data affecting machine learning.

## AAI 511 - Neural Networks and Deep Learning

Neural networks have wide-reaching applications, including apps that identify people in photos, automated vision systems for large-scale object recognition, smart home appliances that recognize continuous, natural speech, self-driving cars, and software that translates from any language to any other language. In this course, students will imbibe the fundamental principles of neural networks and state-of-the-art approaches to deep learning using in-demand Python packages, such as TensorFlow and PyTorch. Students will also learn to design neural network architectures and training methods through extensive assignments and projects.

## AAI 520 - Natural Language Processing

During this course, students get a deep understanding of representing human language as computational systems in diverse ways, besides the usage of these representations to develop programs for translation, summarization, extracting information, question answering, natural interfaces to databases, and conversational agents.

They will also learn concepts central to Machine Learning (discrete classification, probability models) and Linguistics (morphology, syntax, semantics).

The course also covers computational treatments of words, sounds, sentences, meanings, and conversations, as well as the application of probabilities and real-world text data. Moreover, students will get to learn techniques to address the social impact of natural language processing, such as demographic bias, exclusion, and overgeneralization.



## AAI 521 - Introduction to Computer Vision

This course provides an introduction to the principles and application of computer vision, which uses a combination of traditional AI, machine learning, image processing, and mathematical theories to provide ways of programming a computer to understand visual imagery, whether a static picture, stereo vision for a robot, or motion from video.

It includes diverse topics ranging from feature detection and extraction fundamentals, motion estimation and tracking, image processing, and object and scene recognition. The course focuses on Python, OpenCV, TensorFlow, and Keras while touching upon various other tools.

## AAI 530 - Data Analytics and Internet of Things

Recent advances in IoT have enabled cars, smartphones, home appliances, and several other devices to be connected to each other. The application of AI in IoT requires an understanding of the combined use of machine learning algorithms, sensors, networking, and data analytics.

The course is an ideal platform to provide practical learning experiences and real-world applications, besides imparting knowledge on ethics and law in the IoT domain, including data security and transparency.

## AAI 531 - Ethics in Artificial Intelligence

In this course, students will examine how processes for AI could be deployed within the legal frameworks and satisfy safety goals.

This course also covers the social, political, and economic effects that AI may have on society, besides developing an understanding of issues with AI, including economic, equity, and human rights.

Students will examine the regulations, including the ones that provide individuals with a right to explanation when decisions made by an AI agent affect them. They will also get to review existing and proposed techniques for addressing known challenges such as fairness, privacy, and liability.

Students will study ways to ensure they are equipped to ethically and safely build AI systems and processes.



# FINAL CORE AND CAPSTONE

## AAI 540 - Machine Learning Operations

As a domain, Machine Learning Operations (MLOps) aims to design and properly deploy machine learning models.

MLOps combines Machine Learning, Data Engineering, and DevOps practices to ensure that Machine Learning models and algorithms are reliable, efficient, and, most importantly, useful. Students will be introduced to the fundamental concepts of MLOps and a holistic method of designing suitable ML systems.

They will learn and perform the best practices for building Machine Learning systems with hands-on learning experiences and real-world applications. Students will learn about and implement some Machine Learning algorithms in this course.

## AAI 590 - Capstone Project

In this course, students learn to gain skills to develop AI-enabled systems. They will also apply skills acquired in the program to effectively address ethical, moral, and social issues in their design process.

While working in teams, they will participate in the identification of a problem, develop a project proposal outlining an approach to the problem's solution, implement the proposed solution, and evaluate the result in this Capstone using tools and technologies that they learned during the entire program.



UNIVERSITY ACCREDITATION

**WASC**

**Senior College and  
University Commission**

DEGREE CERTIFICATE

*University of San Diego*

To all to whom these Letters shall come, Greetings  
The Trustees of the University on the recommendation of the Faculty  
and by virtue of the Authority in Them vested have conferred on

**SAMPLE STUDENT**

the Degree of

**Master of Science**  
Applied Artificial Intelligence

with all the Rights, Privileges and Honors thereunto appertaining.

Given at San Diego, in the State of California, this thirtieth day of June,  
in the Year of our Lord, two thousand and twenty-three.

*Jan Kahan*  
President



*Chris Robst*  
Dean, School of Engineering

\* USD's degree programs are validated by the U.S. Regional Accrediting body (WASC) and recognized in the U.S. by the U.S. Department of Education. These degree programs do not have official recognition by Ministries of Education outside the United States.





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University Commission

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