

Graduate Certificate in Applied Machine Learning

In Depth. Industry-driven. Professionally executed.

Milwaukee School of Engineering's Graduate Certificate in Applied Machine Learning was born from industry demand for professionals with machine learning and artificial intelligence (AI) experience. This focused online certificate program is designed for working professionals and recent graduates and will prepare you to leverage AI and machine learning domains to create innovative, data-driven solutions to problems.

Each course fuses concepts from statistics and computer science to teach you to design algorithms that process data, make predictions and help make decisions. The duration of the certificate program is nine months with students taking one course per semester.

PROGRAM STRUCTURE AND HIGHLIGHTS

- Offered 100% online
- Synchronous evening classes
- Complete in 9 months (two semesters) at a pace of one course per semester
- Build on prior knowledge to develop deep expertise at an accelerated pace
- Combine new knowledge in data science, machine learning, and AI with your domain expertise
- Learn directly from student-oriented faculty who are experts in machine learning
- Apply credits earned toward the online Master of Science in Machine Learning program

ADMISSIONS REQUIREMENTS

- Technical bachelor's degree
- Programming experience with a modern language such as Python, C# or Java—one year of college course work or equivalent minimum
 - *Those with less experience will be encouraged to take CSC 5120—Software Development for Machine Learning*
- Minimum one year of differential and integral calculus required—multivariable calculus or linear algebra preferred
- Resume/CV

Learn More

For additional information about application materials and the submission process at MSOE, [visit us online](#).

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The Curriculum

The Applied Machine Learning Graduate Certificate curriculum is made up of a set of two application-oriented courses. The courses are structured for project-based learning, meaning that you can immediately begin to apply what you are learning in the program to your professional work. Upon completion of the program, you will be able to synthesize solutions in the artificial intelligence and machine learning domains.

CSC 5610—AI TOOLS AND PARADIGMS (4 CREDITS)

This course introduces topics, tools, languages, and methods used in modern AI practice. Subjects of study include a survey of tools used to perform analysis, data preparation, and visualization along with the algorithms, concepts, and theory underpinning AI. Exercises and assignments will expose students to Jupyter Notebooks and libraries in the Python ecosystem for data science, machine learning, and AI.

CSC 6621—APPLIED MACHINE LEARNING (4 CREDITS)

This course introduces concepts of machine learning that explore the study and construction of algorithms that can learn from and make predictions on data. Topics include conceptual aspects of machine learning, feature engineering, an introduction to deep learning, and applications of machine learning and deep learning. Students will reinforce their learning of machine learning algorithms with hands-on laboratory exercises for development of representative applications

Project-Based Learning

MSOE's Graduate Certificate in Applied Machine Learning program is structured for project-based learning. Focus on the fields of your choosing.

EXAMPLES INCLUDE:

- Creating regression models that predict the sale prices of real estate properties
- Engineering new features to improve machine learning model prediction performance
- Applying a pre-trained version of the You Only Look Once (YOLO) model to perform object detection and segmentation with deep neural networks
- Creating machine learning models to distinguish between electrocardiograms indicating healthy patients and those with heart disease
- Applying dimensionality reduction and clustering techniques to explore a large data set of emails
- Analyzing transaction records to identify seasonal patterns in the sales of the products and make suggestions on product inventory levels and in-store displays

Graduate Certificate in Applied Machine Learning

Meet the Faculty Leads

RJ Nowling, Ph.D.

Program Director, Graduate Certificate in Applied Machine Learning

Dr. RJ Nowling is an *assistant professor of computer science and director of the machine learning certificate* at MSOE.

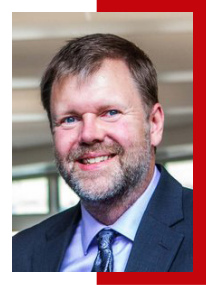
In collaboration with students and external research groups, he applies machine learning and data science to genomic data with the goal of extracting interpretable knowledge. Prior to joining MSOE, Dr. Nowling worked on applications of machine learning into web services at companies like Red Hat and AdRoll. Dr. Nowling earned a Ph.D. in Computer Science and Engineering from the University of Notre Dame and a B.S. in Computer Science and Mathematics from Eckerd College. He teaches courses in data science, machine learning and algorithms.



Eric Durant, Ph.D., MBA, P.E.

Program Director, Master of Science in Machine Learning

Dr. Eric Durant is a *professor and director of the machine learning program* at MSOE. He also served for 16 years as director of MSOE's computer engineering program. Dr. Durant researches the use of real-time audio processing with a focus on hearing aids, artificial intelligence and deep learning. He also has researched genetic algorithms to efficiently fit audio processing parameters in hearing aids, robust perceptual rank inferencing, beamforming, convex optimization and spatialization. He works regularly with Starkey Hearing Technologies as a senior digital signal processing (DSP) research engineer II and was a visiting professor at NVIDIA.



Earn a certificate that gets you noticed.

Step up to be a leader at your company. MSOE's Graduate Certificate in Applied Machine Learning program teaches you high-value, hard-to-hire-for skills employers need.

To learn more about the Graduate Certificate in Applied Machine Learning program, get in touch with admissions via email at onlineprograms@msoe.edu or by phone at **414-240-0464**.

Or, if you're ready to apply, get started on your application. [Apply here](#).