

BUILDING ARTIFICIAL INTELLIGENCE, CERTIFICATE

Requirements for an undergraduate certificate may be completed at any campus location offering the specified courses for the certificate.

Program Description

This certificate is designed to give students studying computer science and software engineering an opportunity to specialize in designing, developing, and refining artificial intelligence systems. We define the field of artificial intelligence as the discipline of creating systems that can perform cognitive functions such as information processing and decision-making usually associated with human minds.

Certificate coursework gives students hands-on experience creating systems that incorporate the latest advancements in AI. Students will build models and AI systems with various data structures for text, image, and multimedia. They may refine and modify existing models or create new models based on their own curated datasets. Course topics may include neural networks, word embeddings in natural language processing used in large language models, one-shot vs. few-shot approaches to training models, identifying faulty datasets, and the importance of metadata in model preparation. Students and faculty might work together to prepare models for training and to explore the potential of carefully curated models.

Examples of building AI systems in coursework may include:

- Enhancing computer vision of patterns and movement in space with LIDAR sensors
- Training a computer to recognize words in books, printed documents, or handwritten documents.
- Training voice-to-text recognition software based on analysis of sound patterns
- Developing software that applies neural networks to train mechanical robots
- Building pathfinding systems to allow robots to navigate unknown terrain
- Fine-tuning a chatbot that comments on calendar input with a stylized voice or persona
- Creating non-player characters that behave intelligently in video games