ILLINOIS WESLEYAN UNIVERSITY

COMPUTER SCIENCE

The importance and pervasiveness of information technology in our society has increased the demand in virtually every kind of organization for those with an understanding of the foundations of computing, as well as those with specific technical training. Students will develop a firm comprehension of the fundamental principles of computing and the capabilities, limitations and applications of algorithmic problem solving. The study of these principles involves data structures and algorithms, their formal properties, linguistic abstractions, hardware realizations and the applications of these concepts in several areas.

Why Computer Science at Illinois Wesleyan?

- Illinois Wesleyan's computer science program differs from most other computer science programs in that its foundational approach to computing is set within the context of a liberal arts curriculum.

- Students will master multiple approaches to programming and problem solving, apply analytical methods that establish the correctness and efficiency of algorithms, use levels of abstraction to manage complexity, and prepare to adapt to technical changes in the field.

- The computer science program at Illinois Wesleyan focuses on the context in which computers and computing structures exist in today's rapidly changing technological environment.

- The department philosophy is to prepare graduates to identify relationships between computing and organizational/societal problems, needs and issues.

Putting Learning into Practice

- Computer Science faculty provide students with opportunities to become engaged in collaborative research projects and independent study.

- Recent project topics have included work in computational linguistics, theoretical computer science and network security.

A Sampling of Courses Offered by Computer Science:

Algorithm Design and Analysis

Artificial Intelligence

Compiler Construction

Computational Discrete Mathematics

Computer Organization and Architecture

Database Systems

Introduction to Computer and Data Science

Introduction to Computer Science Using the Web

Models of Computing

Networking

Operating Systems

Physical Computing

Programming Languages

Software Development

" **The Computer Science program at IWU has made me**
successful and marketable in the computer industry due to the breadth of education provided. The focus on not just programming but on writing and research gave me a leg up on other Computer Scientists. The program introduced just enough of the other key concepts, like computer architecture, to give me the tools necessary to be able to succeed wherever necessary.

The IWU computer science education combined with an excellent liberal arts education, which taught me 'how to learn,' has given me all I have needed to feel competitive in the technology industry!"

Jay Bryant '01
OpenStack Cinder Subject Matter Expert for IBM

- Students can gain work experience as lab assistants or as tutors.

- Internships are available in a variety of corporate settings nationally and in Bloomington and Chicago.

- The department has student chapters of the Association for Computing Machinery (ACM) and Y E, the Computer Science Honorary Society.

- Graduates of computer science can look forward to gaining admittance to top graduate and professional schools, many pursuing advanced degrees in computer science, computer engineering, robotics and other computer-related and technology graduate fields.

- Those who decide to begin their careers following graduation will find their computer science education prepares them to work in areas related to computer hardware and software, engineering, banking and financial services, healthcare, government, communications, computer consulting, electronics manufacturing, education, film, online services, data processing and more.

- Graduates of our program have been very successful in finding employment with a range of private companies, including Google, Amazon, IBM, Boeing, Microsoft, Motorola, State Farm Insurance and Discover Financial; and public institutions, such as the local school districts, University of Texas at Austin, the University of Iowa, Stony Brook University and Bradley University.

Research Honors Projects Recently Completed by Computer Science Students:

- "Analyzing and Extending an Infeasibility Analysis Algorithm," *Ammar Malik*

- "Native Cardinality Constraints: More Expressive, More Efficient Constraints," *Jordyn C. Maglalang*

- "Rapid Face Detection Using Independent Component Analysis," *Aditya Rajgarhia*

- "Limits of Diagonalization and the Polynomial Hierarchy," *Kyle Barkmeier*

- "Unsupervised Learning to Improve Anomaly Detection," *Daniel Garrette*

- "Using Binary Space Subdivision to Optimize Primary Ray Processing in Ray-Tracing Algorithms," *Mark Portolese*

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