

## Computer Science Program

### ■ Program Overview

Computer science and technology is the first-level discipline of the Department of Computer Science and Engineering (CSE) of SJTU. Granted the qualification of conferring Doctoral degree in 2000, it comprises of three second-level disciplines, namely “computer software and theory”, “computer system structure” and “computer application”. In 2002, “computer software and theory” was rated as the national key discipline, the only one for the computer science discipline in universities and colleges in Shanghai. It then successfully passed the five-year assessment of the national key discipline in 2007, and computer application is recognized as the national key discipline, which made computer science and technology a national key first-level discipline.

To further develop the discipline and meet the society’s needs, CSE Department, while carrying on the traditional disciplinary framework, has introduced talents of different fields and formed seven research institutes:

Institute of Parallel and Distributed Computing

Institute of Network and Service Computing

Institute of Theoretical Computer Science

Institute of Cryptography and Information Security

Institute of Intelligent Human-Computer Interaction

Institute of Computer Application

Institute of Computer Architecture

The Department of CSE has been devoting great efforts to attracting talents. During the past decade, a number of excellent talents from home and abroad were introduced and formed highly international faculty. Currently, there are 61 full-time teachers (including 27 professors) and 8 research assistants in the department. Among the full-time teachers, 55 possess doctoral degrees (90%) and 27 of them gained their degrees overseas (44%), 34 (56%) are under the age of 45.

The faculty includes one academician of Chinese Academy of Science, two scholars from the Recruitment Program of Global Experts, five winners of the National Science Fund for Distinguished Young Scholars, one honored as Distinguished Teacher by “the National High-Level Talents Special Support Plan”, two scholars from the Recruitment Program of Global Youth Experts, one winner of Outstanding Young Scientist Fund and seven “New Century Talents”. There are also two who were awarded as Excellent Academic Leaders of Shanghai, one Professor of Special Appointment (Eastern Scholar), two Shanghai Rising-Star Program scholars, three Dawning Program scholars, four Huangpu River Talent Program scholars, one winner of Microsoft New Faculty Fellowship Award and one winner of CCF-Intel Young Faculty Researcher Program.

Since 2001 teachers of the department have served as the chief editor, associate editor, or editorial board member of international academic journals for over twenty times, and general chair or program committee chair for international

academic meetings. In addition, 68 individuals were invited to lecture at conferences.

With the highly international teaching staff, the department endeavors to conduct international advanced and original academic research and build internationally renowned research teams. It aims to create an internationally excellent discipline of computer science in regards to talent cultivation, scientific research and academic standing.

### ■ Research Directions

Computer System Structure

Computer Software and Theory

Computer Application Technology

Advanced Computer Architecture and Chip Technology

Information Safety

### ■ Main Courses

Course name(English)	Semester	Credit Hours	Departments	To whom
The Experimentations of FACTS	fall	2	Electrical Engineering of SEIEE	Master
Applied science of Superconductivity	Spring	2	Electrical Engineering of SEIEE	Master
Applications of Large System Optimization Theory to Power Systems	Spring	2	Electrical Engineering of SEIEE	Master
Modern Power Supply Technology	Spring	2	Electrical Engineering of SEIEE	Master
Computer Vision	Spring	3	Automation of SEIEE	Doctor
Information Fusion	Spring	2	Automation of SEIEE	Doctor
Adaptive Control	fall	2	Automation of SEIEE	Master
Advanced research writing	summer	2	Automation of SEIEE	Master

Presenting scientific ideas – case studies from embodied intelligence	summer	1	Automation of SEIEE	Master
Linear System Theory	fall	3	Automation of SEIEE	Master
Machine Learning - Fundamental and Practice	Spring	3	Computer Science of SEIEE	Master
Image Processing and Machine Vision	fall	3	Computer Science of SEIEE	Doctor
Theory and Methods for Statistical Learning	fall	3	Computer Science of SEIEE	Doctor
Intelligent Speech Technology	Spring	3	Computer Science of SEIEE	Master
Network Computing	Spring	3	Computer Science of SEIEE	Master
Digital Image Processing	fall	3	Computer Science of SEIEE	Master
Advanced Computer Architecture	fall	3	Computer Science of SEIEE	Master
Computer Graphics	Spring	3	Computer Science of SEIEE	Master
Advanced Computer Networks	fall	3	Computer Science of SEIEE	Master
Programming Language	Spring	3	Computer Science of SEIEE	Doctor/Master
Statistical Learning and Inference	fall	3	Computer Science of SEIEE	Master
Bioinformatics	Spring	3	Computer Science of SEIEE	Master
Security Engineering	fall	2	Computer Science of SEIEE	Master
Coding and Information Theory	fall	3	Computer Science of SEIEE	Master
Algorithm analysis and Theory	Spring	3	Computer Science of SEIEE	Master

Applied Algebra	fall	3	Computer Science of SEIIEE	Master
Parallel Computing and Algorithms	Spring	2	Computer Science of SEIIEE	Master
Computer Animation Design And Data Visualization	fall	3	Computer Science of SEIIEE	Master
Modern Mobile Communications and Computing	Spring	3	Computer Science of SEIIEE	Doctor
Advanced Topics on Internet of Things	fall	3	Computer Science of SEIIEE	Doctor
Introduction to Web Search and Mining	Spring	2	Computer Science of SEIIEE	Master
Digital Image Processing	fall	3	Electronic Engineering of SEIIEE	Master
Stochastic Processes and Queuing Theory	fall	2	Electronic Engineering of SEIIEE	Master
Design and Performance Analysis	Spring	3	Electronic Engineering of SEIIEE	Master
Communication Theory and Systems	fall	3	Electronic Engineering of SEIIEE	Master
Modern Signal Processing	fall	3	Electronic Engineering of SEIIEE	Master
Visual Computing Theory and Engineering	Spring	2	Electronic Engineering of SEIIEE	Master
They and Technology of Information security	fall	2	Electronic Engineering of SEIIEE	Master/Doctor
Array Signal Processing and Space-Time Signal Processing	Spring	3	Electronic Engineering of SEIIEE	Master
Waveguide optics	Spring	3	Electronic Engineering of SEIIEE	Master
Electrumagnetic in Modern Communication	fall	2	Electronic Engineering of SEIIEE	Master

Advanced Theory of Wave Propagation and Antenna	fall	2	Electronic Engineering of SEIEE	Doctor
Semiconductor Physics and Devices Physics	Spring	3	Electronic Engineering of SEIEE	Master
Advanced Theory of Electro magnetic Field	fall	3	Electronic Engineering of SEIEE	Master
Organic Electroluminescent Display and Lighting	Spring	3	Electronic Engineering of SEIEE	Master
Theory of Microwave and speed circuits	Spring	3	Electronic Engineering of SEIEE	Master
Low-noise electronic Design & Detection of Signal in Noise	Spring	3	Instrument Science and Engineering of SEIEE	Master
Chinese	fall/spring	2	International School of Education	Doctor/Master
Chinese Culture	fall/spring	2	International School of Education	Doctor/Master
Matrix Theory	fall	3	Mathematics	Master
Algorithmic method	fall	3	Mathematics	Master