Faculty of Electronic and Information Engineering

International Master's Programme in Computer Science and Technology

First-level discipline name (Code): Computer Science and Technology（0812）

Second- level discipline name (Code):

1.Introduction

The discipline is dedicated to in-depth exploration of the structure of computer systems, software theory and application technology, and to train students to become senior professionals in computer system design, software development, theoretical research and technological innovation. With machine learning and big data analysis, machine vision and virtual reality, Internet of Things and intelligent systems as its research directions, the discipline aims to promote the development of the field of computer science and technology through rigorous academic research and practical innovation, and to contribute to social progress and scientific and technological innovation.

There are 35 teachers in this discipline, including 6 professors and 22 associate professors. There are 2 national experts, 1 young and middle-aged expert with outstanding contribution in Jiangsu Province, 3 young and middle-aged academic leaders of Jiangsu Province's 'Blue and Blue Project', and 4 young backbone teachers of Jiangsu Province's '333'. The college has established extensive cooperation and exchanges with colleges and research institutes in more than 10 countries and regions, including the United States, Canada, Britain, Australia, Belgium, Hong Kong, etc., which creates good conditions for cultivating high-quality, innovative and high-level informatisation talents. In recent years, the college has presided over and undertaken more than 60 provincial and ministerial-level projects, such as the National Key Research and Development Programme projects, the National Natural Science Foundation of China projects, the Jiangsu Provincial Key Research and Development Programme, the Jiangsu Provincial Industry-University-Research Joint Innovation Projects, etc. The college has been awarded 8 awards for scientific and technological achievements. It

has won 8 provincial and ministerial-level scientific and technological achievement awards, more than 60 nationally authorised patents, and published more than 500 academic papers in high-quality journals such as TPAMI.

2.Training objectives

To establish patriotism, a scientific worldview and methodology, and master the basic principles of Marxism. Physical and mental health, good conduct, good professionalism and scientific ethics, and a good spirit of cooperation. Master's degree holders of this discipline should master the solid basic theories and systematic expertise of computer science and technology, and have the ability of analysis, design, development and research of computer systems; master at least one foreign language; have the scientific attitude and work style of being rigorous and realistic. They should be competent in scientific research, engineering research and development, teaching and organisational management in institutions of higher education, research institutes and industrial sectors.

3.Research Directions

01 Machine Learning and Big Data Analytics

The discipline direction focuses on big data analysis, data mining, machine learning theories, methods and their applications. Main Research Direction:

1. Machine Learning Theory and Applications

Research on machine learning theories and methods and application techniques in related industries.

2. Data Mining Theory and Methods

Research on high-dimensional data feature extraction and deep mining, multi-source heterogeneous big data fusion, dynamic multi-scale data analysis theory and methods.

02 Machine Vision and Virtual Reality

This subject direction focuses on the theory, methods and their applications of machine vision and virtual reality. Main Research Direction:

1. Visual Feature Extraction and Representation

Research on image and video data preprocessing, feature extraction, target recognition theories and methods and their applications.

2. 3D modelling theory and methods

Research on 3D modelling, feature matching, scene drawing theories, techniques and their applications.

03 Internet of Things and Intelligent Systems

This subject direction mainly researches the theory, mechanism and application technology of information acquisition, transmission, analysis, control optimisation and information management for complex systems. Main Research Direction:

1. IoT network application technology

Research on IoT architecture, protocols and next-generation network technologies and their applications in related fields.

2. Modelling and Analysis of Intelligent Systems

Research on the theory and methods of simulation and modelling, control and optimisation of intelligent systems and their applications.

4.Years of Study

1. The duration of the Master's programme is three years. The maximum duration of study from admission to graduation is 4 years.

2. Outstanding postgraduates who have completed the training programme in advance may apply for early defence, but the advance time shall not be more than one year; the opening of the dissertation for early defence shall be advanced accordingly and the application shall be submitted 2 weeks before the opening of the dissertation, and shall be carried out with the consent of the supervisor, the examination and approval of the college in which they are placed and the approval of the Department of Postgraduate Studies, and the relevant formalities shall be completed.

3. Those who fail to complete the cultivation plan within the stipulated study period may, with the approval of the university, extend the study period by 1~3 years within the stipulated

study period; those who extend the study period shall apply for the extension 2 weeks before the end of the last semester of the normal study period (or within the extended study period), with the consent of the supervisor, the examination of the college, the approval of the Graduate School and the implementation of the relevant formalities, and the related fees shall be paid according to the standard of the current year. The period of leave of absence shall be counted as years of study in the university.

5.Cultivating method

The system of supervisor responsibility is implemented for the training of postgraduates, and supervisors are encouraged to supervise collectively and implement diversified training modes such as disciplinary team cooperation, university-university joint training, industry-university-research joint training and international cooperation training; postgraduates are encouraged to start the dissertation research during the period of course study.

6.Credits requirements

Master's degree programmes are based on the credit system. The number of credit hours for each postgraduate course is as follows: one credit hour for each 16 credit hours of general courses, and one credit hour for each 32 credit hours of foreign language courses, laboratory courses and design courses.

Basic requirements for postgraduate credits: a total of not less than 32 credits and not more than 36 credits, and at the same time satisfy the credit requirements for public courses, basic courses of academic disciplines, basic courses of specialties (directions), elective courses and mandatory courses; before applying for the dissertation defence, they must have completed all the contents stipulated in their individual cultivation plan, and comply with the provisions of their speciality cultivation programme.

Postgraduate students studying professional knowledge related to their research topics may systematically self-study certain courses with content specified by their supervisors and

included in their individual training programmes, but without credit.

7.Courses setting and requirements

7.1 Courses setting

Course Setting Table

Category		Course Code	Courses Name	Credit hours	Credit	Semestr			Assessment	Remarks
						1	2	3		
Degree course	General courses	1001	Basic Chinese(Conversation and Listening)	64	4	√			Exam	General course (12credit points)
		1002	Basic Chinese (Reading and Writing)	32	2		√		Exam	
		1003	China Overview	32	2	√			Exam	
		1004	Probability theory and mathematical statistics	32	2		√		Exam	
		1005	Chinese Characters and Chinese Culture	32	2		√		Exam	
	Foundational courses	2001	Fundamentals of Programming	32	2	√			Check	Discipline foundation courses (4 credit points)
		2002	software engineering	32	2		√		Check	
	Technical courses	3001	Machine learning	32	2	√			Check	Technical foundation courses (4 credit points)
		3002	Scientific and technical paper writing	32	2	√			Check	
Non-Degree courses	Optional course	4001	Scientific Computing and the MATLAB Language	32	2		√		Check	Optional course (12 credit points should be completed)
		4002	Java-based Web Applications	32	2		√		Check	
		4003	artificial intelligence (AI) fundamentals	32	2		√		Check	
		4004	neural network computing	32	2		√		Check	
		4005	Robot control technology	32	2		√		Check	
		3006	automatic control theory	32	2		√		Check	
		4007	Intelligent Building Environments	32	2		√		Check	

		4008	Next Generation Visual Computing	32	2		√		Check	

7.2 Courses Requirements

Degree courses must have a score of 70 or above and non-degree courses must have a score of 60 or above

7.3 Education Arrangement

In principle, all courses should be completed within 1 year.

8.Dissertation requirements

1. Dissertation is an important part of the cultivation work of postgraduates, including the selection of the topic of the dissertation, the opening report, the mid-term examination, the pre-defence, the evaluation and the defence. Each part of the dissertation work shall be carried out in accordance with the Regulations on Selection and Opening Report of Master's Degree Dissertation of Soochow University of Science and Technology (SUSTech), Regulations on Mid-term Inspection of Master's Degree Dissertation of SUSTech, Regulations on Pre-defence of Master's Degree Dissertation of SUSTech, and Regulations on Granting of Master's Degree of SUSTech, and so on, respectively.

2. The topic of the dissertation shall be closely related to the important needs of China's economic and social development, focusing on the important theoretical and disciplinary frontiers, with certain practical application value and academic theoretical significance; the research of the topic shall be advanced and feasible, and the workload and degree of difficulty shall be appropriate; the dissertation shall be at the level of master's degree dissertation. The dissertation must be completed independently by the students under the guidance of the supervisor. After the topic of the dissertation is decided, the time for working on the dissertation shall not be less than one year. The dissertation shall be written in accordance with the ‘Basic Format of Master's Degree Dissertation and Related Requirements of

Soochow University of Science and Technology'.

3. The master's thesis defence is conducted in accordance with the Interim Measures for the Implementation of the Regulations on Academic Degrees of the People's Republic of China and the Rules for the Conferment of Master's Degrees of Soochow University of Science and Technology.