

Curriculum Vitae

Xu Xian

Associate professor
Department of Computer Science and Engineering
East China University of Science and Technology (ECUST)

Personal Information

Phone: +86 13661880256
+86 (0)21 64251936*18
Email: xuxian2004@gmail.com; xuxian@ecust.edu.cn
Homepage: <http://basics.sjtu.edu.cn/~xuxian/>
Postal address: 130, Mei Long Road, Department of Computer Science and Engineering,
East China University of Science and Technology, 200237, P.R. China.
Nationality: Chinese
Date of birth: 16 December, 1979
Language: Chinese (native); English (lower-intermediate); Japanese (basic)

Education

09/2004 - 07/2008

PhD student, [Shanghai Jiao Tong University](#)

Computer Science and Technology

PhD thesis title: **On the Bisimulation Theory and Axiomatization of Higher-order Process Calculi**

Supervisor: **Fu Yuxi**

PhD degree obtained: 03/2008

(★ Hewlett-Packard Company Scholarship, 2008)

09/2002 - 03/2005

Master student, [Shanghai Jiao Tong University](#)

Computer Science and Technology

Master dissertation title: **On the Integration of Grid Service and J2EE Technology**

Supervisor: **You Jinyuan**

MA degree obtained: 03/2005

(★ General Electric Company Scholarship, 2004)

09/1998-07/2002

Bachelor, [Shanghai Jiao Tong University](#)

Computer Science and Technology

BSc degree obtained: 07/2002, Shanghai Jiao Tong University

(★ Top 10 Student of the Department of Computer Science and Technology at Shanghai Jiao Tong

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University, 2002; Sanwa Bank Scholarship, 2002; Guanghua Scholarship, 1999; People's Scholarship of Shanghai Jiao Tong University, 1998 - 2002)

Work experience

07/2008 – 08/2011 **Lecturer**; Department of Computer Science and Technology, East China University of Science and Technology

09/2011 – now **Associate professor**; Department of Computer Science and Technology, East China University of Science and Technology

Overseas experience

06/2012 - 06/2013

visiting scholar, *University of Bologna, Italy ("Alma Mater Studiorum ")*

China Scholarship Council (Category A Fully Funded)

Supervisor: Davide Sangiorgi

*Research (paper) title: **Tree structures from the interpretation of lambda-calculus in concurrency models***

Education---Teaching

Teaching at ECUST:

- ✧ Discrete Mathematics (including MOOC), Java Programming, Introduction to the Assembly Languages, Data Structures, and Software Development Technology, for sophomores
- ✧ Discrete Mathematics, for international students
- ✧ Principles of Compilers, and Software Engineering, for third-years
- ✧ Financial Information Security, Blockchain Technology, and Financial Data Mining Practice, for fourth-years
- ✧ Communication and Concurrency and Theory of Computation, for graduate students
- ✧ The Formal Semantics of Programming Languages, for graduate students of engineering
- ✧ Supervising undergraduate and graduate students theses each year, 2008-2021
- ✧ Supervising College Student Innovation and Entrepreneurship Training Program
 - On Garbage Collection in Erlang (2018)
 - The application of computer Vision in the inspection of the appearance of sanitary ceramics (2020)
 - Psychometric Evaluation System for Programmers Based on NLP and Machine Learning (2021)
 - Visualization System for Smart Contract Implementation of Anonymous Transactions on Blockchain (2023)

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- Research on Digital Signature Algorithms Supporting Blockchain Consensus Protocols (2024)
- Blockchain Privacy Computation (2024)
- ✧ Class Advisor: CS 132 (2013-2017), CS 182 (2018-2022), CS-SE231 (2023-2026)
- ✧ Educational Reform:
 - Discrete Mathematics MOOC Curriculum Construction Project (2018-2020)
 - East China University of Science and Technology (Compilation Principles) (2022-2024)
 - Exploration of Compilation Technology Course Teaching for Effective Quality Assurance (2023-2024)
- ✧ Awards:
 - Second Prize of Teaching Achievement Award, East China University of Science and Technology (2019)
 - Third Prize of the National University Teacher Teaching Innovation Competition (2020)
 - Third Prize of "Internet+" Competition of East China University of Science and Technology (2020)
 - Second Prize of the 16th Shanghai College Student Computer Application Ability Competition (2024)
 - Third Prize of the 17th China College Student Computer Design Competition (2024)
- ✧ The performance evaluation contribution of the School of Information of East China University of Science and Technology, among the teaching and research associate professors of the Department of Computer Science, ranked first in undergraduate performance for five consecutive years

Research Interests

Main Interests:

- Concurrency Theory. Various **process models**, such as CCS, pi-calculus, higher-order process calculi. Including their *semantics, bisimulation theory, axiomatization, (un)decidability, and comparison in expressive power*. The *logical approach* in process calculi. The relationship between process calculi and other concurrent models.
- The application of concurrency theory to various areas. Such as *distributed computing, (Web) service computing, security protocols analysis, and (big) data analysis in AI*.
- Cryptography and its application in industries (e.g., blockchain). In particular, the research topics pertaining to the foundation of cryptography, such as the complexity problems that underlie the modern cryptography (e.g., **lattices based cryptography**). Also the real and effective applications of cryptography to the industry, such as fully homomorphic encryption, and applications (e.g., **blockchain**). For blockchain, the UC security of various protocols, and privacy protection on a variety of blockchains.

Others:

- Differential privacy.
- Distributed computing.
- Java technology, Enterprise development and related.
- Systems Biology. Applying formal methods in modeling, analyzing and verifying biological systems.

Research Projects

As principal investigator:

- ✧ Shanghai 2024 "Science and Technology Innovation Action Plan" Blockchain Key Technology Research Project (No. 24BC3200500)
"UC Security and Implementation Consistency of Key Security Protocols of Open Source Consortium Blockchains", 2024-2025
- ✧ Shanghai 2024 "Science and Technology Innovation Action Plan" Blockchain Key Technology Research Project (No. 24BC3200300)
"Research on security and privacy cross-chain technology for multi-level cross-chain requirements between complex open-source consortium chains" sub-project #2, 2024-2025
- ✧ Shanghai Key Laboratory of Highly Trustworthy Computing (No. OP202205)
"Research on the Key Issues of Off-chain State Channels in Blockchain Networks", 2023-2024
- ✧ Guanyuan (Shanghai) Technology Co., Ltd
"Blockchain Lab Training and Research Materials Procurement Project", 2023-2024
- ✧ The National Nature Science Foundation of China (NSFC) (Grant No. 61872142)
"On Higher-order Processes with Parameterization", 2019 - 2022
- ✧ Scientific Research Foundation for the Returned Overseas Chinese Scholars, State Education Ministry
"On the Bisimulation Characterization and Completeness of Higher-order Processes with the Abstraction Operation", 2015 - 2017
- ✧ International Cooperation and Exchanges by the the National Nature Science Foundation of China (NSFC) and ANR by French Government (Grant No. 61261130589 and ANR 12IS02001 PACE)
"PACE beyond plain Processes: Analysis techniques, Coinduction and Expressiveness", 2013 – 2017 (principal investigator of the second sub-project on the Chinese side, with D. Sangiorgi as the principal investigator of the same sub-project on the French side)
- ✧ The National Nature Science Foundation of China (NSFC) (Grant No. 60903020)
"On the Expressiveness of Channel-Based Higher-order Process Calculi", 2010 - 2012
- ✧ The Shanghai Specialized Fund for Research by Young Teachers and Scientists
"On the Theory and Application of Higher-order Processes", 2010 - 2011
- ✧ The ECUST Specialized Fund for Research by Young Teachers and Scientists (Grant No. YH0157123)
"On the Theory and Application of Higher-order Process Calculi", 2009 - 2010
- ✧ The University Students Research Plan (USRP) of ECUST (Grant No. 20110896)
"The Design and Realization of a Higher-order Process Compiler", 2011 - 2012

As co-principal-investigator / core formal member:

- ✧ The Research Center for Big Data of Gas Consumption (joint project of Shanghai Shen Neng Gas Group and ECUST) (Grant No. H300-41714Y) 2018 - 2021
- ✧ The Information Development Special Funds of Shanghai Economic and Information Commission, (Grant No. 201602008), 2016 - 2020
- ✧ The National Nature Science Foundation of China (NSFC) (Grant No. 60903189)
"On the Safety-provable Distributed PKI in the Network Environment", 2010 - 2012

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- ✧ The BoShiDian Research Fund (Grant No. 20090073120024)
“**On the Basic Problems of Distributed PKI in the Real Network Environment**”, 2010 - 2012
- ✧ The Bio-x DNA Computer Consortium (BDCC) (Grant No. 03DZ14025)
(Sub Project) “**Formal Studying of DNA-Computing**”, 2006 - 2008
- ✧ The BoShiDian Research Fund (Grant No. 20010248033)
“**Formal Studying of Biological Processes Using Processes Algebra**”, 2007 - 2009
- ✧ The National Nature Science Foundation of China (NSFC) (Grant No. 60473006, 60573002)
“**Formal Studying E-business Protocol Using Processes Algebra**”, 2007 - 2009
- ✧ The National 973 Project (A large project funded by the Chinese government) (Grant No. 2003CB317005), 2007

Some older ones (as informal member):

- ✧ The National Software Components Management Project, 2001- 2002
- ✧ J2EE Application Server Project (Shanghai Science Committee, Shanghai Distributed Computing Center), 2002-2003
- ✧ Internet Portal Project (China Telecom), 2003
- ✧ Production Line Management System (Shanghai Lucent Fiber co. Ltd.), 2003
- ✧ Shanghai Grid Project (Shanghai Science Committee, Shanghai Jiao Tong University and IBM Grid Computing Center), 2003 - 2004

Awards

- ✧ **Best Paper Award of FSEN 2015**, with D. Hirschhoff and J.-M. Madiot, for the paper “A Behavioural Theory for a Pi-calculus with Preorders”, 2015
- ✧ Collaboration of Senior Professors and Young Teachers, Second prize, ECUST, 2010
- ✧ Third Prize of 2024 (17th) China College Student Computer Design Competition.
- ✧ Second Prize in the 2024 (16th) Shanghai College Students' Computer Application Ability Competition.
- ✧ Third Prize of the 2020 East China University of Science and Technology "Internet+" Competition.
- ✧ Third prize in the 2020 National University Teacher Teaching Innovation Competition.
- ✧ 2018 Dragon Boat Race Collective Rapids Courage Award.
- ✧ Participated in the East China University of Science and Technology Sports Meeting for many times and won the winning award (6th in the shuttlecock kicking competition and 3rd in the same boat competition).

Bibliography (selective)

Please see my personal homepage at <http://basics.sjtu.edu.cn/~xuxian/>.