UNDERGRADUATE PROFILE
Yifan Wang

(Yifan Wang is one of the first batch of undergraduate student of SIST (2014-class). He went to MIT for one academic year's study in August 2016. Let's listen to his sharing about his story and experience.)

I was born and raised in the dynamic city, Shanghai. During my high school days, I had a deep interest in mathematics and got some national awards. Because of this, Tsinghua University gave me an offer to study mathematics in one of the best universities in China. But, at that time, I heard that ShanghaiTech, a brand-new university, is recruiting its first class of undergraduates. After knowing its spirit and motivation, I told myself this is it.

Now I am a junior student at SIST. After two years' study, I was chosen to apply for the special student program of MIT. It has been a great honor exchanging at MIT, one of the best universities in Computer Science. Before leaving, I had a rough idea of how life is like at MIT. I heard from professors that life is going to be tough. I doubted that at that time, since life at ShanghaiTech is also not easy, but I made it. However, after spending three months here, I began to realize how naive and ignorant I was. Steve Jobs once said and I quote "Sometimes life's going to hit you in the head with a brick. Don't lose faith." Nevertheless, I still believe that everything that keeps me going is that I love what I did.

Thanks to last year's summer school experience, getting along with the MIT community is much easier and few culture shock is experienced. But there is still a question in my heart, how good can I be? I was told that top students at MIT are really good. In the first Algorithm class, professor made an introduction with examples of greedy algorithm and dynamic programming, both of which I was not familiar with. While classmates responded quickly and gave correct answers, my concerns grew up. I

remember professor Yi Ma told us on the opening ceremony that he scored 42 in his first exam at Berkley. "Am I going to be like that?" My inner voice kept repeating this question in the first week. Professor Ma is my advisor at ShanghaiTech. He congratulated on knowing I was going to MIT and joked that don't make him feel ashamed of me, which I thought was never going to happen. So I had a talk with my nice TA. He encouraged me to carry on and said those concepts will be introduced more formally in the following lectures. This gave me a great relief. I began to realize that my concerns were indeed unnecessary, the best way to make professor Ma proud is to be myself. So I chilled out and beat on, studying without all those concerns. The first exam soon arrived and turned out to be difficult. The mean score was about half, and I scored almost full. Since then I picked up my confidence.

Besides taking lectures, I am also doing researches in computer graphics. This is a completely new area to me. Fresh things always appear to be appealing, especially when you can see the beautiful outcomes directly, which is why graphics attracts me most. But underneath those beauties lay the complicated mathematical methods. This is the point where life becomes tough again. Although some of the most common methods are introduced in Linear Algebra, the rest of them can only be found in papers. I tried to understand them on my own at first, but there were some difficulties. Thankfully, Professors here are nice people. I remember the first time I turned to professor Wojciech Matusik for

help. It was a Friday afternoon. I knocked at his door with a mixed feeling of tension and excitement. He sat me down on the couch and solved all my questions. Right now, I am attending his group meeting. Every time I am impressed by those cutting-edge ideas and cool results. Students in the group tend to hold a brainstorm session to gather ideas for their researches and it is really insightful.

Apart from studying, life is also fabulous. I joined MIT Outing Club, a club held by MIT alumni. During the hiking and camping, I made friends both inside and outside the MIT community, some of them are pursuing PhD degrees while others are going to work. In the morning, we hiked in White Mountains in New Hampshire. The feeling of walking in the woods are peaceful. Leaves are turning red in fall and the view from the top is like a gorgeous painting. In the night, we set up a campfire to keep warm and share stories around it. I also learned many skills like chopping the wood, installing electronics, setting up a campfire, etc.

It is thanksgiving today, and I want to take this opportunity to express my sincere gratitude and appreciation to ShanghaiTech for this golden opportunity, to professors for the help they provide, to friends for the support they gave. Happy thanksgiving and may we all have a wonderful time!

(invited by Lijun Tu, written by Yifan Wang, Youyi Zheng)

JOIN US !
TENURE-TRACK AND TENURED POSITIONS

ShanghaiTech University invites highly qualified candidates to fill multiple tenure-track/tenured faculty positions as its core founding team in the School of Information Science and Technology (SIST). We seek candidates with exceptional academic records or demonstrated strong potentials in all cutting-edge research areas of information science and technology. They must be fluent in English. English-based overseas academic training or background is highly desired.

ShanghaiTech is founded as a world-class research university for training future generations of scientists, entrepreneurs, and technical leaders. Boasting a new modern campus in Zhangjiang Hightech Park of cosmopolitan Shanghai, ShanghaiTech shall trail-blaze a new education system in China. Besides establishing and maintaining a world-class research profile, faculty candidates are also expected to contribute substantially to both graduate and undergraduate educations.

Academic Disciplines:

Candidates in all areas of information science and technology shall be considered.

Our recruitment focus includes, but is not limited to: computer architecture, software engineering, database, computer security, VLSI, solid state and nano electronics, RF electronics, information and signal processing, networking, security, computational foundations, big data analytics, data mining, visualization, robotics, computer vision, bio-inspired computing systems, power electronics, power systems, machine and motor drive, power management IC as well as inter-disciplinary areas involving information science and technology.

Compensation and Benefits:

Salary and startup funds are highly competitive, commensurate with experience and academic accomplishment. We also offer a comprehensive benefit package to employees and eligible dependents, including on-campus housing. All regular ShanghaiTech faculty members will join its new tenure-track system in accordance with international practice for progress evaluation and promotion.

Qualifications:

- Strong research productivity and demonstrated potentials;

- Ph.D. (Electrical Engineering, Computer Engineering, Computer Science, Statistics, Applied Math, or related field);

- A minimum relevant (including PhD) research experience of 4 years.

Applications:

Submit (in English, PDF version) a cover letter, a 2-page research plan, a CV plus copies of 3 most significant publications, and names of three referees to: sist@shanghaitech.edu.cn (until positions are filled). For more information, visit http://sist.shanghaitech.edu.cn/NewsDetail.asp?id=373

(provided by Yu Zhou, reviewd by Haoyu Wang)

SISTORS AT SIST FAMILY TILL NOW

Numbers of SISTors

(written by Bei Ma, Sören Schwertfeger)

SIST TO HOST SSRR 2017

SIST will be hosting the 15th IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR 2017) in October 11-13 2017. This will be the first IEEE conference held at ShanghaiTech. For more information and the call for papers please refer to:

http://www.ssrr-conference.org/2017

(written by Sören Schwertfeger)

ShanghaiTech University
SIST NEWSLETTER

School of Information Science and Technology
http://sist.shanghaitech.edu.cn/

2016 SIST SYMPOSIUMS SERIES

The ShanghaiTech Symposium on Information Science and Technology 2016 (SSIST 2016) was held successfully from June 23rd to 25th, 2016 at Parkyard Hotel in Shanghai.

SSIST 2016 focused on three topics: Robotics, Virtual Reality, and Computing Theory and Systems. The Symposium featured some of the most exciting developments in robotics such as unmanned helicopters and cars, as well as revolutionary virtual reality technologies.

The six keynote speakers, Shankar Sastry, Dean and Roy W. Carlson Professor of Engineering at University of California-Berkeley; Andrew Chi-Chih Yao, Dean & Professor of the Institute of Interdisciplinary Information Sciences at Tsinghua University; Vijay Kumar, Nemirovsky Family Dean; Li Zexiang, Professor of the Department of the Electrical and Electronic Engineering School of Engineering at HKUST; Raja Koduri, Senior Vice President of AMD and Wolfram Burgard, Professor at Freiburg University, gave excellent speeches. The invited speakers came from HTC, Facebook, IBM, Caltech, Stanford, Shanghai Jiaotong University, Tsinghua University, and other well-known enterprises & universities. There were totally around 1000 people ranging from the under-graduate students to the postdoctoral researchers and the professors, researchers attended the symposium.

As an important part of SSIST 2016, the ShanghaiTech Workshop on Emerging Devices, Circuits and Systems (SWEDCS'2016) was on the following several days from June 30th to July 1st . The workshop's speakers include some best-known figures in the semiconductor and computing fields such as Professor Chenming Hu, the recipient of the 2015 US National Medal of Technology & Innovation and a member of the US National Academy of Engineering; Professor Yale N. Patt, the recipient of 2016 Benjamin Franklin Medal in Computer and Cognitive Science and a member of the US National Academy of Engineering; Professor Kaushik Roy, an IEEE Fellow; and Dr. Kevin X. Zhang, an Intel Fellow and the vice president in the Technology and Manufacturing Group at Intel Corporation.

The 2016 Symposium on Research and Application in Computer Vision (RACV2016) was held in the stadium of ShanghaiTech from September 18th to 20th. The symposium focused on the theoretical and application research in computer vision. Three keynote speakers and another 24 invited speakers came from universities, research institutes and high-tech companies all over the world, including Israel Institute of Technology, University of Technology Sydney, Peking University, Zhejiang University, Hong Kong University of Science and Technology, The Chinese University of Hong Kong, and etc.

"To create a unique open and free academic environment that enables all researchers young and senior to achieve their full academic potentials" is one of SIST's mission and we are striving to achieve it. The two symposiums and the workshop attracted around 2500 attendees which provided a good platform for all the attendees to communication the state of the art research and industrial technologies with each other. The high level of the academic conference also helped SIST win a bunch of good reputations in the country and abroad.

(written by Ying Xue, Haoyu Wang)

ARRIVALS OF THREE NEW FACULTY MEMBERS

Prof. Ning Cai:
Ph. D. (1988), Bielefeld University, Germany; IEEE Fellow, Recipient of 2016 IEEE Eric. E. Sumner Award.

Assist. Prof. Cheng Wang:
Ph. D. (2015), Institut National des Sciences Appliquées de Rennes, France.

Assist. Prof. Fu Song:
Ph. D. (2013), Université Paris Diderot - Paris 7, France.

(written by Daihuan Chen, Liangfeng Zhang)

2017 GRADUATE ADMISSION OF SIST

SIST tenure-track professors have accomplished 74% of Class 2017 graduate admission. 57 exam-exempt students have been admitted with an acceptance rate of 7.3%.

Among the 57 new students, 31% are from the Project 985 universities, 60% are from the Project 211 universities, 12% are ranking No. 1 at their majors, 35% are ranking Top 5% at their majors, 61% are ranking Top 10% at their majors.

(written by Bei Ma, Ning Cai)

SIST'S FIRST BATCH OF MASTER STUDENTS GRADUATED

SIST is proud to announce that our first batch of 74 Master students, that joined us in 2013, graduated successfully. Among them, 20 earned their degree in Electronic Science and Technology, 34 in Information and Communication Engineering, 20 students will continue to pursue a doctoral degree at SIST. The employment rate of the graduated 54 students is 100%.

Most of these students got offers and competitive compensations from well-known enterprises of computer, Internet, software, communication technology, and Internet finance, such as HUAWEI, Baidu, Alibaba, Spreadtrum, SMIC etc.

This is an awesome start for SIST and a great inspiration for all our students. Well done graduates and good luck for all your future endeavors!

(written by Henan Ni, Bei Ma, Sören Schwertfeger and Haoyu Wang)

GEEKPIE TEAM AND GEEKBETA TEAM WON PRIZES IN SAIKESONG EXTREME PROGRAMMING CHALLENGE

On October 15th, i-Lab (云赛空间) organized the Saikesong Extreme Programming Challenge under the guidance of Xuhui District People's Government, INESA and Microsoft China. GeekPie team and GeekBeta team form SIST won the second prize and the third prize, respectively.

(written by Henan Ni, Yanlin Geng)

THE TEAM OF GRADUATE STUDENTS RANKS NUMBER TWO IN SPICE

Chu Shanbo   *Zhao Yanpeng*

The Sequence PredictIction ChallengE (SPiCe) is an on-line competition about guessing the next element in a sequence. The team of the SIST graduate students, Shanbo Chu and Yanpeng Zhao made second place among a total of twenty groups from all over the world.

As a result of the competition a short paper was submitted to the International Conference on Grammatical Inference (ICGI), which was held in Delft, Netherlands, from 5th to 7th October 2016. Both Shanbo Chu and Yanpeng Zhao are students of Prof. Kewei Tu and they have published several research papers on the topic this year.

(written by Daihuan Chen, Sören Schwertfeger)

POSTGRADUATE ACTIVITY

A. Coffee Hour Documentary of SIST

B. On May 14th, graduates from Mechatronics and Energy TransformAtion Laboratory (METAL) and Power Electronics And Renewable energies Laboratory (PEARL) took a hike in the Gongqing Forest Park and enjoyed the barbecue.

C. On October 29th, Professor Haoyu Wang's research group finished the 6 kilometers running around the school, which is their annual running activity.

D. Alumni Style: Xia Sun, Professor Yi Ma's former student, one of SIST's first-class master graduates, now a software engineer in Microsoft Suzhou, said: The care from the alma mater continues, no matter where she is.

(written by Henan Ni, Yanlin Geng)

上海科技大学

加入我们 让自己的未来 与周大油

University

PROF. YANLIN GENG AWARDED 2016 IEEE INFORMATION THEORY SOCIETY PAPER AWARD

IEEE Information Theory Society is the paramount community developing the mathematical underpinnings of information technology for the benefit of humanity. Every year, this society gives out The Information Theory Society Paper Award for an outstanding publication in the fields of interest of the Society, appearing anywhere during the preceding two calendar years.

This year, the prize was awarded to our very own Yanlin Geng, Assistant Professor of SIST, for his paper "The Capacity Region of the Two-Receiver Gaussian Vector Broadcast Channel With Private and Common Messages." "The purpose of this Award is to recognize exceptional publications in the field and to stimulate interest in and encourage contributions to fields of interest of the Society."[1]

[1] http://www.itsoc.org/honors/information-theory-paper-award
(written by Daihuan Chen, Sören Schwertfeger)

## PROF. YUANMING SHI RECEIVES 2016 IEEE MARCONI PRIZE PAPER AWARD

This May at the IEEE International Conference on Communications, Prof. Yuanming Shi was awarded 2016 Marconi Prize Paper Award, for his paper "Group Sparse Beamforming for Green Cloud-RAN." This award honors it as the best paper published in 2014 in the IEEE Transactions on Wireless Communications. "The IEEE Guglielmo Marconi Best Paper Award is an annual award, sponsored by Qualcomm Inc., for an original paper in the field of Wireless Communications published in the IEEE Transactions on Wireless Communications."[1]

[1] http://www.comsoc.org/about/memberprograms/comsoc-awards/marconi
(written by Daihuan Chen, Sören Schwertfeger)

PROF. KEWEI TU'S GROUP ATTENDED EMNLP 2016 AND MADE PRESENTATIONS
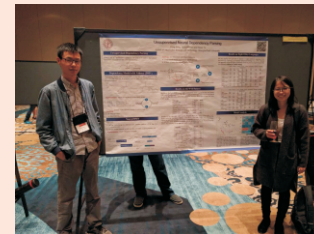
Empirical Methods in Natural Language Processing (EMNLP) is a leading conference in the area of Natural Language Processing. From 1th to 5th November 2016, Prof. Kewei Tu and his two graduate students, Wenjuan Han and Yong Jiang, attended EMNLP 2016 and made presentations on their three accepted papers. These three papers are "Context-Dependent Sense Embedding", "Unsupervised Neural Dependency" and "Parsing and Modified Dirichlet Distribution: Allowing Negative Parameters to Induce Stronger Sparsity".

(written by Daihuan Chen, Sören Schwertfeger)

NEW FACULTY PROFILE:
Prof. Xufeng Kou
Devoting to the Next-Generation IC Revolution to Realize the Chinese Great Revival at ShanghaiTech

(In June 2015, SIST welcomed Dr. Xufeng Kou (Ph.D. 2015, UCLA) on its faculty. Let's listen to his sharing about himself and joining ShanghaiTech.)

I was born and raised up in Chengdu. From the year 2005 to 2009, I received my undergraduate study at Chu-Ko Chen Honors college at Zhejiang University. Thanks to the inter-disciplinary education provided by CKC, I gained a solid background in math, physics, along with information science and engineering. After graduation with the highest honor, I continued my graduate career at the Electrical Engineering department of UCLA, under the direction of Raytheon chair professor Kang L. Wang. During my PhD program at UCLA, I mainly focused my research on novel semiconductors electronics and spintronics devices. After receiving the post-doctoral training, I was fortunate enough to join the SIST family and start my new career as a faculty member of the post-Moore IC center.

As one of the new 1980s generation, I grew up in a world coined as the information era, whose success has been built on the integrated circuit (IC) industry. For more than 50 years, the Moore's Law has been successfully applied to guide the scaling strategies of CMOS technology: the number of transistors in a dense integrated circuit doubles approximately every two years. Most importantly, by making transistors smaller, it turned out that everything got better simultaneously – the speed of our microprocessor kept becoming faster and the system reliability improved by leaps and bounds; while the cost of doing thing electronically has dropped significantly. Unfortunately, such "scaling without tradeoffs" benefit did not last forever. In fact, even before we talked about the single-electron transistor, the energy dissipation for nanometer-scale transistors has become the most critical challenge at the end of the silicon golden age. So when I was about to begin my graduate study in 2009, I determined to dedicate myself into this great event, trying to witness the advent of another Renaissance for the new semiconductor era.

As we all know, the key to deal with the power dissipation dilemma in Si-based electronics is to regulate the electron motion. Just like how architects designed the freeway networks to solve the traffic problems in urban cities, we can also construct the electron highway system so that electrons travelling along opposite directions are separated, and all electron collisions are forbidden. In fact, for conventional electronics, we only utilize the charge feature of electron. Alternatively, governed by the quantum mechanics and particle physics theory, an electron, which belongs to the spin-½ fermions, can only have either "spin-up" or "spin-down" state relative to a reference (an applied magnetic field or magnetization orientation of a magnetic film). Therefore, spin itself, as a natural binary system, can also carry information. Accordingly, by utilizing the spin degree of freedom and the interactions of charge and spin at the nanoscale, we are able to better manipulate the information process, thus leading to the next-generation low-power, high-speed electronics applications. Such emerging research field regarding to this revolution is called spintronics. As a result, during my graduate study, I have investigated several proposed spintronics material platform (one example is the topological quantum system which was just awarded by the Nobel Prize in Physics this year) where the spin states (i.e., the information bits) can be well manipulated and low-power information transport has been realized experimentally; In the meanwhile, I have also explored the utilization of the inherent non-volatility feature of spin (i.e., to design high-speed SpinFETs and energy-efficient non-volatile magnetic memory devices), which allows for power to be removed without loss of information, hence potentially eliminating the standby power issue. All our results show a great promise of spintronics for next-generation electronics applications.

More importantly, I think the great opportunity provided by spintronics is most critical for China as our country is on the way to achieve the Chinese Dream. It is known that because of the problems left over by history as well as the longtime technology blockade imposed by the West, China's IC development has been regarded as the third-tier citizen in the information era; and we are spending an incredibly huge amount of money on importing the high-level electronics chips every year. In order to make breakthrough in this field, we need to have the brave heart to take this great challenge by making the most advanced "heart"(that is the CPU) for next-generation electronics systems. In this regard, SIST and ShanghaiTech, as a brand-new yet experienced warrior in the center of Zhangjiang Hi-Tech Park, has determined to become the pioneer to lead the IC revolution in China, and this is the main reason I want to participate into this great college and devote myself to this challenging but exciting process. As one wise man said "One person's fate, on the one hand, depends on his/her own ways of striving for life; yet more importantly, is shaped by the course of history", I truly believe that with the strong force and energy formed in the post-Moore IC center at SIST, we can really establish our brand name in the emerging spintronics research field (from the fundamental device level to the sophisticated hybrid spintronics-CMOS system), and hence propel the Chinese IC development towards the highest level.

With endowed unparalleled wisdom and creativity of the human society, I believe the next technology revolution featured by ultra-fast, multifunctional, low-power, non-volatile spintronics is more than foreseeable; and I would like to encourage our SISTers and more young talent people to join us, as "Long as the way is; I see no ending. Yet I will search high and low with my will unbending".

(invited by Bei Ma, written by Xufeng Kou, Shenghua Gao)

GRADUATE PROFILE:

(Yong Jiang was a 2014-class graduate student of SIST, he passed the Doctoral Qualify Examination, and became a 2016-class Ph.D. student of SIST. He went to Berkeley for half a year's study in February 2016. He received his bachelor's degree from Hefei University of Technology in 2014. Let's listen to his sharing about his story and experience.)

Yong Jiang

Time flies like an arrow. I still remember those happy days when I was an exchange student at UC Berkeley several months ago. The wonderful half-year journey will benefit my life entirely.

As a short self-introduction, I am currently a third year graduate student and also a first year PhD student at ShanghaiTech University. My research focuses on machine learning, natural language processing and artificial intelligence in general. As UC Berkeley has very strong academic and research programs in these fields, I was very excited when I was accepted to take part in the Berkeley-ShanghaiTech-Exchange (BeSTEC) program with my adviser Prof. Kewei Tu.

After getting my US VISA, I started preparing for my study in the next half year. My plan was to work hard to take advantage of this opportunity. I checked the CS Spring 2016 Class Schedule and selected several courses to audit. Also, I read several papers from the Berkeley NLP group to see what research topics the researchers there were focusing on at that time.

My journey started at the beginning of February. Gradually, I adapted to the culture, food and life at Berkeley. My time at UC Berkeley is a mixture of study, research and collaboration.

My research mainly focuses on technologies related to artificial intelligence. The first course in my auditing list was the CS 188: Artificial Intelligence. The CS 188 course was a very popular course in the EECS department. In this semester, over five hundreds students from many different departments had taken this course. The course started with the traditional AI algorithms such as search algorithms and ended with the most recent research results of artificial intelligence such as deep learning. The slides, projects and homework were all well designed. After taking this course, I got a full view of the development of the AI technologies. In addition, I attended the teaching staff meeting of this course with my adviser. According to the agreements of the exchange program, the course material will be provided to our university to help establish a similar course. I will be one of the teaching assistants to help Prof. Kewei Tu with this new course in Spring 2017 and I am looking forward to it. The second course that I took was the CS 189 machine learning course. Although I had self-studied lots of materials of this course before, the course enhanced my understanding of many concepts, models and algorithms with the intuitive teaching and explanation by the lecturer, Prof. Jonathan Shewchuk. As an expert in computational geometry, he always used a visual interpretation approach and taught complicated concepts with nice plots and pictures . The last course I took is the EE 227C convex optimization course, which was lectured by Prof. Ben Recht. Ben was very energetic at teaching and his classroom was always full of laugh and happiness. As the course was a graduate course, the material was very advanced. Ben divided the entire semester into two parts. During the first part, Ben gave a review of the development of the optimization field. The second part of the course emphasized the big picture of recent work, with some talks given by researchers he invited. These courses not only broadened my view of machine learning and artificial intelligence, but also provided me new tools of solving hard problems.

For research and collaboration, since I took this exchange program with my adviser Prof. Kewei Tu, it was convenient for me to discuss and work with him to solve some hard problems in my research. In addition, during the half year, we visited the Berkeley NLP group, attended their weekly lunch meeting and had discussions with them. I learned quite a lot of new ideas from the brainstorming discussions with them. At that time, I was working on two collaborative projects with my adviser and two fellow students at ShanghaiTech. Through remote collaboration with my fellow students as well as benefited from discussion with people at Berkeley, we finally got one paper accepted to EMNLP 2016 and one paper accepted to AAAI 2017, both are top conferences in my research fields. I think I will benefit all my life from the research experience during my stay at Berkeley.

The half year time passed quickly, but the exciting moments and experiences of my "Berkeley life" are always in my mind. I would like to thank my adviser for supporting my visit at Berkeley, and thank SIST and ShanghaiTech for providing me the chance to take part in this exchange program. I am very proud to be a part of this newly built university!

(invited by Yao Hu, written by Yong Jiang, Youyi Zheng)