2018

Self-discipline
Social Commitment

The Brief Introduction of TSINGHUA UNIVERSITY

Department of Computer Science and Technology

Photo by Li shangyuan
History

Established: 1911

National Tsinghua University: 1928

Graduate School: 1929

University Mottos:
Self-discipline, Social Commitment

University Maxim:
Actions Speak Louder than Words
20 Schools and 57 Departments

- School of Architecture
- School of Civil Engineering
- School of Environment
- School of Mechanical Engineering
- School of Aerospace Engineering
- School of Information Science and Technology
- School of Materials Science and Engineering
- Dept. of Engineering Physics
- Dept. of Chemical Engineering
- School of Life Sciences
- School of Medicine

Covering disciplines in science, engineering, literature, art, history, philosophy, economics, management, law, education, and medicine.
Faculty Number:

- Faculty: 3414
- Professor: 1353
- Fellows of the Chinese Academy of Sciences: 45
- Fellows of the Chinese Academy of Engineering: 33
- IEEE/ACM Fellow: >100
Diverse student body: 47201

- Undergraduate: 15570
- Masters Students: 19311
- Ph.D. Candidates: 12320
- International Students: 3472

Well Known Alumni
Campus Map

• Garden-like campus
• Situated on former imperial gardens of the Qing Dynasty
• Total area of nearly 400 hectares
• Completed construction > 260,000 m²
Facilities—New Concert Hall and Traditional Auditorium
Facilities—Art Museum
Facilities—Sports
Welcome to the Department of Computer Science and Technology (THCST)
Mission and Goal

Our goal is to build a world first-class computer science research and teaching institute…

“The Computer Science and Technology Department of Tsinghua University has become a world-class computer science research and teaching institute”

By international assessment experts in 2010
The computer science major was established in 1956.

Department of Automatic Control was set up with computer science as one of its majors in 1958.

Renamed to Department of Computer Engineering and Science in 1979.

Network Research Center was established in 1994.

School of Software was established in 2001.

Institute for Theoretical Computer Science was established in 2007.

Institute of Network and Cyberspace was established in 2012.

Evolution of THCST:

1956 - The computer science major was established
1958 - Department of Automatic Control was set up with computer science as one of its majors
1979 - Renamed to Department of Computer Engineering and Science
1994 - Network Research Center was established
2001 - School of Software was established
2007 - Institute for Theoretical Computer Science was established
2012 - Institute of Network and Cyberspace was established

Prof. ShimoZhong, 1st Dept. Head, Ph.D. from MIT, 1947
In 1958, the nonlinear analog computer model 551 was built.

In 1959, the tube-based digital computer model 911 was launched and put into operation in 1964.
Milestone—1980s

* The first IBM compatible micro computer in China, 0520-C, jointly developed by Tsinghua, Great Wall Computer Corp. and the 6th Institute of Ministry of Electronic Industry, was put into massive production.

* An Apple compatible micro computer CEC-1 for high school and primary school students was developed at Tsinghua and over 130,000 units were produced.
In the 1990s, CERNET, the largest national education and research network in the world was built. As the driving force, Tsinghua University led its development and operation.
Ranking in China

No. 1 CS Major in China

- 1996: No. 1 CS major in China Discipline Ranking
- 2002: No. 1 in three evaluation terms in China Discipline Ranking
- 2006: No. 1 CS major (Full mark) in China Discipline Ranking
- 2012: No. 1 CS major in China Discipline Ranking
- 2012: No. 1 SE major in China Discipline Ranking
Best Global University for Computer Science

1. Massachusetts Institute of Technology
   - United States
   - Cambridge, MA
   - #2 – Best Global Universities

2. Tsinghua University
   - China
   - Beijing
   - #57 (tied) – Best Global Universities

3. Stanford University
   - United States
   - Stanford, CA
   - #3 – Best Global Universities

4. Nanyang Technological University
   - Singapore
   - #74 – Best Global Universities

Quacquarelli Symonds World University Rankings

Subject Score

- #1 Massachusetts Institute of Technology: 100
- #2 Tsinghua University: 98.2
- #3 Stanford University: 96
- #4 Nanyang Technological University: 95.3
Institutes

* Institute of High-Performance Computing
* Institute of Computer Network
* Institute of Computer Software
* Institute of Human-Computer Interaction and Media Integration
* State Key Lab of Intelligent Technology and Systems
**Faculty Statistics**

- **97 faculties and 21 staffs**
  - 4 members of Chinese Academy of Science/Engineering
  - 42 full professors
  - 47 associate professors
  - 6 IEEE Fellows

- **95% of faculties have PhD degree**
  - 11.8% have oversea Ph.D. degree

- **Over 50% have oversea working experience of over half a year**
## Research Areas

<table>
<thead>
<tr>
<th>Next-Generation Internet</th>
<th>Information Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Performance Computing and Services</td>
<td>Data and Knowledge Engineering</td>
</tr>
<tr>
<td>Software Engineering</td>
<td>Intelligent Information Processing</td>
</tr>
<tr>
<td>Computer Graphics and Multimedia</td>
<td>Pervasive Computing and Human-Computer Interaction</td>
</tr>
</tbody>
</table>
Research Highlights

Cernet

Run the No.1 HPC in the world
(Sunway Taihu Light :125.436PFlops)

Academic Social network (Aminer)
More than 600M visits from 220 countries
Hybrid Machine-Human Computing

Software Engineering

Brain- Controlled Robot

Human-Computer Interface
Research grants has been increasing consistently over the past years

- 1~2M RMB / faculty
- About 2/3 of research funding comes from government, 1/3 from industry
- International Cooperation with more than 20 countries from North America, Europe, Asia, Australia, Africa.

**Annual Research Funding (Unit: 1M RMB)**

- 2008: 88
- 2009: 87
- 2010: 150
- 2011: 102
- 2012: 125

**Source of Research Funding**

- 863 (MOST): 22%
- 973 (MOST): 9%
- Other Government Divisions: 28%
- Domestic Industry: 12%
- International Collaboration: 15%
- NSFC: 14%
Education Programs

* Programs & Degrees
  * Undergraduate program (Bachelor): 4 years
  * Master program
    - Master of Science (M.S.): 3 years
    - Master of Engineering (M.E.): 3 years
    - Master in Advanced Computing (for foreign students, in English): 2 years
  * Ph.D. program (Ph.D.): 4-6 years
Undergraduate

* Admission
  - TOP 10 in their home provinces
  - 92% of all IOI winners
  - 85% of all NOI winners
  - 150 students/year
  - About 610 students
Undergraduate

* 83 courses (CS and public courses)
* 17 outstanding courses
* 3 Beijing distinguished teachers
* Three unique features:
  - Freshmen Seminar
  - Advanced Laboratory
  - Student Research Training (SRT)
Student Research Training (SRT) helps undergraduates gain experience at early stage of their research career.

Selected students joined research projects advised by faculty members. More than 600 undergraduate students worked on over 740 SRT projects in recent five years.
Graduate Students

* Current graduate students: 1195
  - Doctoral candidates: 484
  - Master of Science: 341
  - Master of Engineering: 370

* Courses
  - 70 graduate courses
  - 11 Tsinghua Outstanding Courses
Students have published hundreds of papers in top conferences/journals such as SIGGRAPH, SIGCOMM, SIGMOD, SIGKDD.

A number of best paper awards at ACL, COLING, CHI, Multimedia, ICME, ICCD, FSE etc.
Opportunities for Students

* Internship in industry
  - MSRA, Google, IBM, Intel, Tencent, Baidu, Sohu, Netease

* Scholarship from major IT companies
  - Tsinghua THCST became the 11th member of Siebel Scholars Program in 2009, the only one outside U.S.

* International conferences and visits
  - ~200 students attend international conferences per year
  - ~100 students visit international institutions per year
Advanced Computing (International)

* International Master/PhD program
  * Launched in 2010/2017
  * students
    - 105 Degree students
    - more than 70 Exchange students

* International diversity
  * ~ 20 countries
    - 40% from Europe
    - 40% from Asia
    - 10% from U.S.
    - 10% from Africa
Advanced Computing (cont.)

- Two years
  - 24 credits (~10 courses)
- Applicants should have a Bachelor's degree in CS or related areas
  - GPA: 3.2
- Living cost
  - About 3500 RMB/month
  - Food, housing... included
- Scholarship
  - Chinese Government Scholarship
  - Beijing Government Scholarship
  - 60% degree student will get scholarship
Advanced Computing—Courses

* **Compulsory course (12 credits)**
  - Chinese Language
  - Chinese Culture and Society
  - Academic Activities
  - Literature Survey and Thesis Proposal
  - Combinatorics and Algorithms Design
  - Machine Learning

* **Elective Courses (no fewer than 11 credits)**
  - Web Information Retrieval
  - Database Technologies
  - Fundamentals of Computer Graphics
  - Topics in Advanced Multimedia Technologies
  - ……
Student Exchange

* Notre Dame University/University of South California/Stanford/MIT/CMU… (Research based)
* USC/CMU…in US (Course/Research based)
* Imperial College London (Course/Research based)
* Epitech and Suplec in France (to our English Master program) (Course/Research based)
* Five universities in Hong Kong (Course/Research based)
Dual-degree Program (MS)

* CMU/USC, 3 years
  - Master degree from both Universities
* Waterloo: 3 years (in Tsinghua) + X years (X>=2)
  - Bachelor degree from Tsinghua University and Master degree from Waterloo
THANK YOU!