

## Degrees

- Ph.D. in Computer Science
- Ph.D. in Computer Engineering
- M.S. in Computer Science, Computer Engineering, and Software Engineering

## Student Composition and Diversity

U.S. News and World Report rated UTA as the 5th-most diverse university in the United States in 2017. The University is an Hispanic-serving institution and is one of the 40 most popular U.S. colleges and universities for international students, based on data from the Institute of International Education's 2014-15 Open Doors Report.

## How to Apply

Begin your application for graduate admission today at:

[uta.edu/admissions/graduate/apply](http://uta.edu/admissions/graduate/apply).

Please be sure to check application deadlines and include all of the required application materials and fees.

## Financial Assistance

All applications for admission will be also be considered for assistantships, fellowships, and scholarships. Complete your application early to take advantage of all opportunities for financial aid.

## Who Hires Our Graduates?

Graduates of the department work in academia and at many companies in the region and around the country, such as Apple, Facebook, Google, HP, IBM, Intel, LinkedIn, Lockheed Martin, Microsoft, NASA, Raytheon, Sabre Holdings, Salesforce, Texas Instruments, and more.

## Learn More

For more information about the Computer Science and Engineering Department, visit our website at [uta.engineering/cse](http://uta.engineering/cse) or contact a graduate advisor:

Sajib Datta, Ph.D. 817-272-0161 <a href="mailto:sajib.datta@uta.edu">sajib.datta@uta.edu</a>	Bahram Kahlili, Ph.D. 817-272-5407 <a href="mailto:kahlili@uta.edu">kahlili@uta.edu</a>
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## Why Pursue a Graduate Degree at UTA?

The Computer Science and Engineering Department has the most graduate students in the College of Engineering and is one of the College's largest departments. CSE faculty are active in the areas of big data analytics;



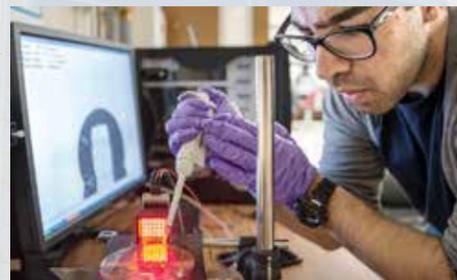
data mining; databases; machine learning; assistive technologies; biocomputing and health informatics; computer networks and cloud computing; computer vision and multimedia; information systems and mobile computing; machine learning and data mining; artificial

intelligence and robotics; software engineering and cybersecurity; and high-performance and sustainable computing, with more than \$5 million in research expenditures. Many of the programs in these areas are ranked among the top 50 in the nation by Microsoft Academic Research.

## An Impactful Research University

The University of Texas at Arlington is rising in stature through its commitment to transforming the lives of students and pushing the boundaries of knowledge. Dramatic, measurable

advancements continue to propel the University toward its goal of becoming one of the nation's premier research institutions. UTA is designated an R-1 Carnegie "highest research activity" institution. Research activity at the university has more than tripled to more than \$85 million over the past 10 years, with increasing expertise in bioengineering, medical diagnostics, micro-manufacturing, and defense and Homeland Security technologies, among other areas. With a projected total global enrollment of close to 57,000 students, UTA is one of the largest universities in Texas. UTA is a first-choice university for students seeking a vibrant college experience. In addition to receiving a first-rate education, our students participate in a multitude of activities that prepare them to become the next generation of leaders.



## An Ideal Location

UTA is located in the heart of the Dallas/Fort Worth Metroplex, the fourth-largest metropolitan area in the United States. Arlington is located between Dallas and Fort Worth and is a center for sporting events, tourism and manufacturing. The Metroplex has one of the highest concentrations of corporate headquarters in the United States, with corporations such as Texas Instruments, AT&T, Ericsson, Lockheed Martin, and many more. Also, just minutes from campus, DFW International Airport and several interstate highways allow easy access to global collaboration and commerce.



# Computer Science and Engineering



UNIVERSITY OF  
TEXAS  
ARLINGTON

DEPARTMENT OF  
COMPUTER SCIENCE  
AND ENGINEERING

## Big Data and Large-Scale Computing

*Big data analytics and mining, cloud computing, computational journalism, data exploration, data science, distributed computing, environmental and tracking data analysis, parallel algorithms, parallel computing, scalable and distributed graph-processing, scalable memory and storage systems, scientific computing, systems support for big data, warehouse-scale computing*

### Associated faculty:

Ishfaq Ahmad	Gautam Das
Chris Ding	Ramez Elmasri
Leonidas Fegaras	Jean Gao
Heng Huang	Junzhou Huang
Hong Jiang	Song Jiang
David Levine	Chengkai Li
Jia Rao	Gergely Zaruba

## Biocomputing and Health Informatics

*Assistive technologies, bioinformatics, computational neuroscience, computer aided rehabilitation, health informatics, human computer interaction, medical informatics*

### Associated faculty:

Chris Ding	Heng Huang
Junzhou Huang	Jean Gao
Fillia Makedon	

## Computer Networks

*Anonymity and privacy online, content-centric networking, Internet distributed traffic control, Internet router interface programming, network function virtualization, next-generation networks, opportunistic networks, pervasive computing, secure peer-to-peer systems, sensor networks, software-defined networking, wireless networks*

### Associated faculty:

Hao Che	Chance Eary
Yonghe Liu	Gergely Zaruba

## Computer Vision and Multimedia

*Endoscopic vision, gesture recognition, human motion analysis, image processing, neural networks, pattern recognition, robotic vision, sign language recognition, signal processing, video compression, visualization*

### Associated faculty:

Ishfaq Ahmad	Vassilis Athitsos
Christopher Conly	Chris Ding
Jean Gao	Heng Huang
Junzhou Huang	Farhad Kamangar
Chris McMurrough	Alexandra Stefan

## Faculty and Research Interests

### Database and Information Systems

*Converting data to knowledge, crowdsourcing and human computation, data modeling and summarization, data exploration, data reduction, data warehousing, database testing, deep web and social media mining, entity query, information integration, information retrieval, knowledge discovery, query processing and optimization, real-time databases, searchable file systems, spatial databases, usability challenges in querying graph data, web data management, XML*

### Associated faculty:

Sharma Chakravarthy	Gautam Das
Chance Eary	Ramez Elmasri
Leonidas Fegaras	Hong Jiang
Chengkai Li	Fillia Makedon

### Embedded Systems and Mobile Computing

*Cyber-physical systems, data acquisition and control, hybrid systems, instrumentation, Internet of Things, mobile and pervasive devices and technologies, mobile applications, modeling and simulation, network simulation and test bedding, real-time systems, reliable and fault tolerant computing, verification and validation, virtual reality, wireless localization, wireless sensor networks*

### Associated faculty:

Bill Carroll	Hao Che
Hong Jiang	Yonghe Liu
Chris McMurrough	John Robb
Roger Walker	Gergely Zaruba

### Machine Learning and Data Mining

*Deep web and social media mining, environmental and tracking data analysis, matrix-based machine learning, neural networks, pattern recognition, similarity-based indexing, social networks, spatio-temporal data analysis and mining, sparse learning, statistical and combinatorial algorithms, statistical optimization and data analytics, tensors*

### Associated faculty:

Vassilis Athitsos	Gautam Das
Chris Ding	Ramez Elmasri
Jean Gao	Heng Huang
Junzhou Huang	Farhad Kamangar
Chengkai Li	Fillia Makedon
Alexandra Stefan	Carter Tiernan

### Robotics and AI

*Assistive robotics, autonomous robot systems, development of intelligent behavior, endoscopic vision, healthcare robotics, robotic vision, sensor-driven robotics, surgical robotics*

### Associated faculty:

Manfred Huber	Chris McMurrough
Lynn Peterson	Carter Tiernan

### Security and Privacy

*Anonymity and privacy online, malware analysis, mobile device security, secure peer-to-peer systems, usable security and privacy*

### Associated faculty:

Chance Eary	Yonghe Liu
Fillia Makedon	Jiang Ming
John Robb	

### Software Engineering

*Agile methods, automated software engineering, automated testing, formal methods, mobile software engineering, object-oriented software engineering, program analysis, program repair, reverse engineering, software cost estimation, software design patterns, software engineering processes, software methodology, software process, software security, testing object-oriented software, verification and validation*

### Associated faculty:

Christoph Csallner	Bahram Khalili
David Kung	Jeff (Yu) Lei
Jiang Ming	John Robb

### Sustainable Computing

*Define standards for power-aware hardware and software, design power efficient architectures, energy-aware computing, resource provisioning, energy-aware routing in sensor networks, evaluate power and performance tradeoff, green data center architectures, restructure software and applications, spatial indexing for sensor queries*

### Associated faculty:

Ishfaq Ahmad	Hao Che
Gautam Das	Ramez Elmasri
Hong Jiang	Jia Rao

## Featured Research

Heng Huang has received multiple grants totalling more than \$6 million for big data research since 2014. His projects include integration of multiple modalities of patient data to treat and combat diseases such as cancer, predicting the probability of contracting Alzheimer's disease, treatment of depression, personalized healthcare, healthcare records analysis and security, and developing an interactive database of gene expressions of the fruit fly.



Junzhou Huang is using a National Science Foundation CAREER grant to develop computing tools that will employ multiple methods of accessing and analyzing very large, complex patient data and allow scientists and doctors to make better clinical predictions and find cures for diseases.



Fillia Makedon and Vassilis Athitsos are using artificial intelligence and an advanced computational approach to help experts assess learning difficulties in children very early in their lives through \$1.27 million of a total \$2.7 million National Science Foundation grant.



Hao Che, with Hong Jiang and Jeff Lei, is using a \$799,950 grant from the National Science Foundation to develop a model that will make it possible for service providers to guarantee service-level objectives without unneeded resources and help cloud consumers purchase the resources that best suit their needs.



Roger Walker is leading a \$671,011 Texas Department of Transportation project to assess whether scanning lasers can accurately measure microtexture of aggregates, which are used in asphalt and concrete mixtures.



## Featured Research Laboratories

### Database Exploration Lab:

Headed by Gautam Das, the DBXLab investigates fundamental research issues arising in Big Data, encompassing diverse areas such as data mining, information retrieval, data uncertainty and probabilistic methods, approximate query processing, data analytics and data exploration of hidden web databases, social and collaborative media.

### Scalable Modeling and Imaging and Learning Lab:

Directed by Junzhou Huang, the SMILE Lab focuses on developing scalable models and algorithms for data-intensive applications in medical modeling, imaging and learning using high performance computing. Of particular interest are advanced algorithms, software and systems for statistical learning, imaging informatics and computer vision with theoretical guarantees to solve practical problems involving large-scale datasets.

### iSEC Lab:

The iSec Lab, headed by Jiang Ming, works to build a secure computing environment in a hostile world. With an emphasis on software security and malware defense, the iSec Lab seeks to develop techniques to find software vulnerabilities and defeat malicious software.

### Vision-Learning-Mining Lab:

The VLM Lab, directed by Vassilis Athitsos, focuses on computer vision, machine learning, and data mining, with applications to areas such as sign language recognition, detection and tracking of complex shapes, large-scale multiclass recognition, and similarity-based retrieval and classification using large databases.

### Innovative Database and Information Systems Lab:

Directed by Chengkai Li, the IDIR Lab focuses on building large-scale human-assisting and human-assisted data and information systems with high usability, low cost and applications for social good, such as computational journalism, crowdsourcing and human computation, database exploration by ranking (top-k), skyline and preference queries, database testing, entity query, usability challenges in querying graph data, and Web data management.