GLOBAL RESEARCH IMMERSION PROGRAM FOR YOUNG SCIENTISTS
The Global Research Immersion Program for Young Scientists (GriPS) is a funded summer research program that spans four to eight weeks. It aims to attract around 200 exceptionally talented and driven undergraduate students from various parts of the world to venture in an immersive research experience at four top universities at China (Fudan University, Zhejiang University, University of Science and Technology of China, and Nanjing University) in China’s Yangtze River Delta region. GriPS students will have the unique opportunity to actively engage in research programs, which includes laboratory experience at one of the four top universities, industry visits, excursions around the picturesque Yangtze River Delta region, immersive Chinese cultural activities, enlightening lectures by esteemed academicians, and a supportive mentorship component.

**Program Application**

*Programme Date:* July 2024  
*Duration:* 4weeks  
*Research Language:* English  
*Application Deadline:* 17 March 2024  
*Website:* [http://grips.zju.edu.cn/](http://grips.zju.edu.cn/)

**Program Information**

1. Waived tuition and registration fees this year  
2. Scholarship covering international travel and local accommodation  
3. Extensive support for arranging travelling, VISA application, etc

**ISTBI, Fudan University**

1. World-class research facilities for neuroimaging, neuromodulation, cognitive neuroscience, artificial intelligence  
2. Innovative and creative research in brain sciences, big data, AI  
3. International leading scientists

**Activities Highlights**

1. Candidates are undergraduates with background in Neuroscience, Computer and Information Science, and Biomedical Engineering  
2. One-week Summer School: Interdisciplinary Research between Brain and Intelligence Course by renowned scientists  
3. Brain and Intelligence Young Scientist Forum with Young scientists from University of Oxford, University of Cambridge, the University of Sydney, and Charlie Hospital  
4. Mini-project: Team-working projects on forefront research in brain science, mental health or artificial intelligence  
5. Team-building: group meetings, presentations, teacher lunch  
6. Leisure: visiting of museums, city tours, Chinese culture activities

**Contact Us**

For more information, please visit istbi.fudan.edu.cn/lnen

For more information about program application, please contact:

Dr Ningning Ma (istbi_ic@fudan.edu.cn)

**Program leaders at ISTBI:**

1. Professor Shouyan Wang (Shouyan@fudan.edu.cn, [https://istbi.fudan.edu.cn/lnen/info/1157/1632.htm](https://istbi.fudan.edu.cn/lnen/info/1157/1632.htm))  
2. Associate Professor Deniz Vatansever (deniz@fudan.edu.cn, [https://istbi.fudan.edu.cn/lnen/info/1158/1812.htm](https://istbi.fudan.edu.cn/lnen/info/1158/1812.htm))  
3. Associate Professor Xiaojian Yan (xayan@fudan.edu.cn, [https://istbi.fudan.edu.cn/lnen/info/1158/1812.htm](https://istbi.fudan.edu.cn/lnen/info/1158/1812.htm))
About FUDAN

Fudan University was established in 1905 as Fudan Public School. With a long and glamourous history, it becomes one of the first National Key Universities, and has developed into a comprehensive research university, with Departments of Philosophy, Economics, Law, Education, Literature, History, Science, Engineering, Medicine, and Management. According to the latest QS World University Rankings, the university ranks 34th in the world and 3rd in China. The university is comprised of 35 schools (or departments) and 17 affiliated hospitals. The university consists of four campuses including Handan, Fenglin, Zhangjiang and Jiangwan, covering a total area of 2,4391 square kilometers.

www.fudan.edu.cn
The brain is most mysterious, complex and inspiring, and attracts great interests of people in both brain and intelligence sciences. ISTBI constitutes a global research hub for scientists across neuroscience, mathematics, computing, clinical medicine and engineering, working together to tackle challenging questions within brain and brain-inspired intelligence sciences. The institute focuses on the interaction of intelligence science with normal cognition as well as psychiatric and neurological disorders, contributes to the development of fundamental theories on brain-inspired artificial intelligence, and translates this cutting-edge research into innovative technologies for diagnosis and treatment of brain diseases. Combining multi-disciplinary research from applied mathematics, computational neuroscience, cognitive neuroscience, and translational medicine, the institute aims to investigate neural mechanisms underlying cognition, emotion, consciousness, to develop brain-inspired theories and whole brain computational models and systems, and to explore the impact of interactions among cultural, developmental, environmental, genetic and cognitive factors on healthy humans and those with psychiatric and neurological disorders. Our ultimate goal is to understand, model and enhance human cognitive processes, develop technological solutions for the diagnosis, treatment and rehabilitation of neurological diseases and psychiatric disorders. The institute is dedicated to making significant, world-class contributions to the growing challenges in the enrichment of brain health worldwide, and to leading pioneering innovations for an intelligence-oriented society.

The Institute of Science and Technology for Brain-Inspired Intelligence (ISTBI), is an interdisciplinary research institution of Fudan University, one of the leading universities in China. It was launched in May 2015. The predecessor of ISTBI was the Centre for Computational Systems Biology, founded in 2008 and was one of the first international and interdisciplinary research centres in China. ISTBI covers several research fields including applied mathematics, statistics, computer science, informatics and neuroscience. The research carried out in ISTBI is interdisciplinary per se, with computational neuroscience playing a pivotal role. ISTBI aims to make significant contributions in the development of basic theories, core algorithms and key frameworks for artificial intelligence. It also has the aims of developing intelligent diagnosis and treatment systems for brain diseases, and establishing principles of cognitive neuroscience. Ultimately, ISTBI will contribute to the innovation and the development of an intelligence-oriented society.

Welcomed by

Professor Jianfeng Feng
Dean of ISTBI

About ISTBI
Research Areas

Cognition and Neuromodulation

We explore the mechanisms of memory, decision-making, emotion etc., at micro, meso and macro scales with functional brain networks. We further conduct translational research of the precision medicine with intelligent neuro-modulation, digital healthcare and big data modeling for diagnosis, treatment and rehabilitation of neurological and mental diseases.

Bioinformatics and Neuroscience

We conduct the cross-disciplinary research between bioinformatics and neuroscience. The brain functions and mechanisms of neural information processing are further explored by integrating the bioinformatics modeling of gene, protein, synapse, neuromodulation and behaviors.

Brain-inspired Intelligence Technology and Application

By developing new algorithms and frameworks of intelligence science, we are laying the groundwork to develop personalized treatment for brain diseases. We are also developing intelligent perception, decision-making, control theories and new-generation unmanned systems that will be applied in autonomous vehicles, intelligent manufacturing, smart city.

Whole-brain Computation and Digital Brain

We develop computational models and platforms by simulating the neural network at whole-brain scales by assimilating functional, anatomical and neuro-physiological neuroimaging data. The digital twin brains (DTB) are further developed to illuminate neural circuits and cognitive functions, and uncover the pathogenic mechanism of brain diseases. The new theories of AI will be developed through the interdisciplinary research between biological and artificial brains.

Neuroimaging and Translational Medicine

We are using AI algorithms and models of multi-omics and multi-modal biomedical data to develop biomarkers for drug development, health risk prediction, diagnosis and treatment technologies of neurological and mental diseases. We also promote innovations in neuroimaging technologies and translational medicine.
A Centre for Cognitive Neuroscience

The Cognitive Neuroscience Center (CNC) is an integrative research platform that investigates the biological basis of cognition from micro-scale individual neurons to systems-level neural circuits. Combining multi-disciplinary research from cognitive, comparative, computational and clinical neurosciences with state-of-the-art neuroimaging, electrophysiological recording and behavioral testing methods, the CNC aims to characterize the neural mechanisms underlying perception, attention, motivation, decision-making, learning and memory, emotions and consciousness.

RESEARCH DIRECTION:
- Molecular mechanisms and neural circuits in cognitive functions
- Computational modeling for cognitive processes
- Cognitive neuroscience in neurological and psychiatric disorders

B Centre for Computational Systems Biology

Interdisciplinary activities involving mathematics, physics, chemistry, and information science, have led to major developments in the life sciences. The Centre aims to establish a platform for computer-aided simulation, along with mathematical and physical analyses of the dynamics of life, based on the fusion of multiple disciplines including big data techniques and newly-developed experimental technologies.

RESEARCH DIRECTION:
- Computational neuroscience and neuroinformatics
- Nonlinear science and its applications to complex systems
- Evolutionary biology and artificial modeling

C Centre for Artificial Intelligence Algorithms

Shanghai Institute of Artificial Intelligence Algorithms

The Centre aims to develop modern mathematics and statistical methods based on principles of the brain to develop a new generation of artificial intelligence, especially neural network models at the whole brain scale through data assimilation methods and computational modeling. By constructing a network of whole brain electrical impulse neurons, the Centre strives to implement learning algorithms such as the algorithm of pattern recognition, attention, and reinforcement learning. For a given input and output electrical pulse array, we rely on the moment neural network framework to build a learning algorithm to implement a multi-input and output model, which will consolidate the basis of mathematical statistics of artificial intelligence algorithms such as the algorithm of supervised learning, semi-supervised learning, and unsupervised learning and will promote the development of an intelligent algorithms library. In 2019, based on the core team of the center, Shanghai Institute of Artificial Intelligence Algorithms was established and unveiled at the 2019 World Artificial Intelligence Conference.

RESEARCH DIRECTION:
- Whole brain pulse network
- Random pulse network learning algorithm
- Learning algorithms and mathematical theories of artificial neural network

CSF-GAN : ICML18

Moment Neuronal Network (Spiking + BP)
Research Centre

Centre for Big Data of Biomedical Sciences
Zhangjiang International Brain Biobank (ZIB)

The Centre is devoted to building the largest multimodal, multiscale and multicenter datasets for biomedical science (brain science), and developing computational approaches in analyzing these datasets. The Centre promotes researches on precision medicine and personalized medical care for brain diseases, cancers, cardiovascular disease, etc.

RESEARCH DIRECTION:
- Multiscale brain database construction
- Computational brain disease
- Brain function analytics

Zhangjiang International Brain Biobank Cohorts
- 6 Cohorts, 15,000 Samples

Centre for Neural and Intelligent Engineering

To improve the clinical treatment of some key neurological and psychiatric disorders, the Centre aims to develop the neural sensing and processing approaches to neuro-dynamics information, and explore the integration strategy of brain information and plasticity mechanisms of brain functions. By combining neural coding and intelligent theories, the Centre will develop neural sensing, neural modulating, neural computing technologies, and innovation in brain-intelligence technology. It will also build intelligent systems on-chip, and create a self-learning intelligent human-machine interface. Through research in intelligent neuro-modulation and neural-bionics, our goals are to provide intelligent devices and creative solutions to protect, improve and modulate the human brain.

RESEARCH DIRECTION:
- Neural information decoding
- Neuro-modulation and neuro-bionics
- Human-machine Interface
- Neurophysiological mechanism and regulation technology of brain disease

Whole Brain Computation Platform

The mission is to simulate human cerebral functions by constructing a digital twin of an individual human brain through digital assimilation, which encompasses neurons, neurotransmitters and neural connections. We develop mesoscopic data assimilation theory for large-scale computational simulation of the brain, in order to generate novel algorithms for brain-inspired intelligence that allow modularity integration. Implementing this project will lead us to the cutting edge of brain-inspired intelligence, revolutionary breakthroughs in brain-inspired algorithm and application, and acceleration of a new generation of AI theory.

RESEARCH DIRECTION:
- Diagnosis and treatment for brain diseases
- Cognitive science
Research Centre

Centre for Biomedical Imaging
Zhangjiang Brain Imaging Centre (ZIC)

In 2016, the Shanghai Municipal Government and Fudan University have invested RMB400M (equal to $65M) to establish the Zhangjiang International Brain Imaging Centre (ZIC). With an area of 114,000 square meters, ZIC has become the largest imaging platform for brain science and brain-inspired intelligence in China. ZIC is the home to the world’s most advanced MRI instruments including an ultra-high-field 7T Siemens Terra MR scanner, a Siemens 3T Connectome MR scanner, a Siemens 3T Prisma MR scanner, and a Bruker 11.7T BioSpec MRI scanner. In addition, ZIC equips with a series of real-time brain function monitoring systems including a near-infrared spectrometer, an electroencephalography system, a magnetoencephalography system, and neuromodulation systems including transcranial direct current stimulation, transcranial magnetic stimulation, and transcranial focused ultrasound stimulation.

RESEARCH DIRECTION:
- Developing unique MRI and MRS methodologies
- Deciphering normal brain function, mechanisms and the etiology of brain disorders
- Developing brain-inspired artificial intelligence

Center for Population Neuroscience and Precision Medicine (PONS)

PONS integrates neuroimaging, cognitive neuroscience, (epi)genomics and epidemiological research with novel tools for environmental assessments, such as ecological momentary assessments using smart phone applications, social media analyzys, and satellite-based remote sensing acquisitions. It aims at the identification of markers and brain mechanisms of risk and resilience for mental illness in different environmental contexts, such as pandemics, pollution, climate change, migration or urbanicity. This knowledge will be applied to develop neurobehavioural interventions targeted at causal brain mechanisms for prevention and early intervention of disease on a public health-relevant scale.

PONS coordinates a network consisting of cohorts of up to 195,000 people, including >25,000 neuroimaging scans in China, Europe, India and the United States, such as the European IMAGEN, STRATIFY and the Indian cVEDA cohort.

PONS works in close partnership with the Charité, one of Europe’s largest university hospitals and research institutions, affiliated with Humboldt University and Free University Berlin, and collaborates with other leading research centres in Europe and the US, i.e. Cambridge University, USC, KCL and Emory University.
Leading Scientists

Jianfeng Feng
Winner of the Royal Society Wolfson Research Merit Award
Chair, Professor of Shanghai National Centre for Mathematical Sciences

Trever Robbins
Fellow of the Royal Society
Fellow of the British Psychological Society
Fellow of the Academy of Medical Sciences
Winner of 2014 Brain Prize

Edmund Rolls
Fellow and Tutor in Psychology at Jesus College, Oxford
Research direction: Computational neuroscience

Barbara Sahakian
Fellow of the British Academy
Fellow of the Academy of Medical Sciences
Research direction: Cognitive neuroscience

Gunter Schumann
Research direction: Physiological psychiatry

Valerie Voon
Research direction: Cognitive neuroscience, neuromodulation, neuromaging, computational psychiatry

David Waxman
Oversees Thousand Talents Program Professor of China
2015 Friendship Award of the Chinese Government
Member of the Board of Refereeing Editors, Science

Xingming Zhao
Professor
Research direction: Artificial intelligence
Data mining

Qibao Zheng
Research direction: Brain-inspired intelligence
Since 2016, we have received over 1 billion CNY (~146 million USD) funding for 65 national research projects and 42 provincial research projects.

We have received over 100 million CNY (~14.6 million USD) funding for 42 enterprise-funded research projects.

**Brain and Brain-inspired Intelligence Key Program – Shanghai Brain Research Initiatives RMB 840 M ($119M)**

In July 2018, the first Shanghai Municipal Brain and Brain-inspired Intelligence Major Project undertaken by Fudan University and Zhangjiang Laboratory with an implementation period of five years and a total investment amount of 840 million RMB was launched. Professor Ningsheng Xu, President of Fudan University and Academician of the Chinese Academy of Sciences, serves as the director of the project and Professor Jiarong Feng, Dean of the Institute of Science and Technology for Brain-inspired Intelligence, Fudan University serves as the executive director. The project focuses on the construction of “One-two-three Project” (one infrastructure, two core competencies and three key technologies) in brain and brain-inspired field, dedicated to making great breakthroughs in the field of intelligent technologies such as brain-inspired intelligence algorithms, intelligent diagnosis and treatment of brain diseases, brain-inspired intelligence chips, brain-inspired intelligence engineering, so as to promote industrial upgrading, improve people’s livelihood in Shanghai and promote the development of smart cities, which will without doubt contribute Shanghai to become an influential brain-inspired technology innovation centre in the world.
High-level Scientific Achievements Consistently Emerging

Over the past five years, our team has made remarkable achievements in neuroscience, computational biology, computational neurology, artificial intelligence algorithms, intelligent diagnosis and treatment for brain diseases as well as other fields, publishing over 900 papers on world-top journals, including Nature, Cell, Nature Med, IEEE TPAMI, etc.
Research-centred Education: Critical Thinking, Freedom of Mind and Challenge-oriented Strategy

The student is at the centre of the education at ISTEI. There is a focus on enabling students to develop their critical and analytical thinking skills, independent research skills, group work, problem solving and leadership skills to prepare them for their career. Education here at ISTEI is closely aligned to current research, often drawing on the interdisciplinary approach that has taken good advantage of Fudan’s solid academic background in key disciplines such as mathematics, statistics, informatics, computer science, life sciences and basic medicine.

Our Strengths

Interdisciplinary Teaching
Multidisciplinary and cross-discipline knowledge applied in mathematics, biomedical engineering, biophysics, computational linguistics, computational psychology, etc.

International Academic Exchange
We have established the “Education Fund (ESMO)” for China-UK Exchanges in Intelligent Robotics” to cultivate our students with the vision of top international scientists by establishing partnerships with more than 20 internationally renowned universities and research institutes such as University of Cambridge and University of Oxford.

Doctor Training Centres
National Key Laboratory of Computational Neuroscience and Brain-inspired Intelligence and other research centres in ISTEI together provide strong support for the cultivation of students.

Entrepreneur and Practical Training
We have constructed an innovative practice platform for training talents by establishing joint laboratories and joint research centers with more than 10 enterprises and more than 30 hospitals, forming joint research projects and projects to promote in-depth innovation and industrial practice of talent cultivation.
High-level International Collaborations

The Institute actively initiates and participates in international scientific cooperation programs, has collaborated with scientists from more than thirty internationally renowned universities, and established partnership with University of Cambridge, University of Oxford, Harvard University, King’s College of London, Stanford University, and The University of Sydney, etc.

Harvard University
Stanford University
Massachusetts Institute of Technology
University of Southern California
University of Minnesota
Salk Institute for Biological Studies
Boston University
New York University
University of California
Johns Hopkins University

University of Cambridge
University of Oxford
Imperial College London
King’s College London
The University of Warwick
The University of Edinburgh
University College London
Cardiff University

Belgian University
Max Planck Institute
Humboldt University of Berlin
French National Centre for Scientific Research
Swiss Federal Institute of Technology in Lausanne

International Cooperation Centre
- Overseas Expertise Introduction Centre for Discipline Innovation ("111 Centre")
- The Jean-Hauter-Knight Centre for Population Neuroscience
- Brain and Intelligence Science Alliance
- Fudan-Centre for Cognitive Neuroscience and Mental Health Institute (leading)

The University of Sydney
International Cooperation Centre

Overseas Expertise Introduction Centre for Discipline Innovation ("111 Center")

The base of Computational Neuroscience and Brain-inspired Intelligence for Discipline Innovation, jointly applied for by ISTBI, the University of Cambridge and the University of Oxford was approved by the Ministry of Education and the State Administration of Foreign Experts Affairs in 2018. We establish the "Overseas Expertise Introduction Centre for Discipline Innovation" ("111 Centre"), promoting collaborative research in computational neuroscience and brain-inspired intelligence.
International Cooperation Centre

The Joint Fudan–King’s Centre for Population Neuroscience

In 2018, Fudan University and King’s College London jointly established the Centre for Population Neuroscience and Precision Medicine (PONS) to investigate the complexity and heterogeneity of behaviour and mental illness on a population level by identifying environmental and genomic factors that shape the structure and function of the human brain. PONS integrates neuroimaging, cognitive neuroscience, (epi)genomics and epidemiological research with novel tools for environmental assessments, such as ecological momentary assessments using smart phone applications, social media analyses, and satellite-based remote sensing acquisitions.
International Cooperation Center

Fudan–Sydney Brain and Intelligence Science Alliance (BISA)

The Brain and Intelligence Science Alliance (BISA) has been established as a platform to raise the research impact of both institutions through inter-disciplinary translational research in the fields related to data science, neuroscience and intelligence. The ultimate goal of BISA is to train research leaders, advance technology innovation and scientific research, and to secure practical applications for science and technology. The four main research areas of BISA are: Cognitive Neuroscience and Brain Disorders, Computational Neuroscience and Neural Engineering, Impact of AI on Ethics, Arts and Society, and Artificial Intelligence and Brain-Inspired Intelligence.

Cambridge–Fudan Brain Health Institute (BHI)

In 2019, Fudan University and the University of Cambridge signed a MoA to facilitate academic collaboration in brain-inspired intelligence, cognitive neuroscience, mental health, ancient civilisation, future philosophy and other fields. The Cambridge–Fudan Brain Health Institute (BHI) is co-founded by the ISTBI and the University of Cambridge.
Milestone of ISTBI

2008 / 03
The predecessor of ISTBI, the Centre for Computational Systems Biology, was established as one of Future’s first Project 985 high-level research centres.

2015 / 05
ISTBI was officially established.
Dean Jianfeng Feng led the first major project in Artificial Intelligence of brain science of the Shanghai Municipal Party Committee.

2016
ISTBI inducted the first young principal investigators.
Facility procurement for the imaging centre was approved.

2017
ISTBI enrolled the first postgraduates.
Construction of Zhangjiang Fudan International Innovation Centre started, with brain and brain-inspired intelligence being the main mission.

2018
*Key Laboratory of Computational Neuroscience and Brain-inspired Intelligence, Ministry of Education* was approved.
*Shanghai Municipal Major Project on Brain and Brain-inspired Intelligence Research and Application* was approved.

2019
Opening ceremony for Zhangjiang International Brain Imaging Centre.

2020
Dean Jianfeng Feng was appointed as Deputy Director of Shanghai Center for Brain Science and Brain-Inspired Technology.
The National Key R&D Program of Revolutionary Technology “Neuromorphic Computing and Inference” was approved.
Fudan-FAIR Nine-Algorithm Institute was established.

2021
Three faculty members were recognised as “World’s Top 2% Scientists 2020” in the field of neuroscience.
Staged products of the “Shanghai Municipal Major Project on Brain and Brain-inspired Intelligence Research and Application” were released at the 2021 World Artificial Intelligence Conference.

2022
“Fudan Innovation China” Center for Brain-inspired Intelligence (International Collaboration and Innovation) was approved.
Applicants must have been internationally recognized and have outstanding academic achievements in brain-inspired artificial intelligence and related fields, as well as the potential to lead a group of scientists and establish a world-class research team. The appointed Distinguished Professors will become leaders or co-leaders of one of the six research centres and will, with their research teams, carry out work that achieves the mission of their centre. The Distinguished Professors also have the duties of recruiting and managing their teams.

Applicants should have excellent publications in related areas and be under 36 years of age. Applicants should be well-recognized by the international academic community, and have the potential to become a Chair Professor. The appointed applicants will carry out work either individually or cooperatively in the Chair Professor’s research team.

Applicants are outstanding scientists from well-known universities, research institutes, and leading companies in related industries. Applicants should have a broad interdisciplinary vision and international peer recognition, and have the potential to collaborate with international colleagues. Applicants should be able to carry out work under the direction of a Chair Professor of the ISTBI.

Applications can be submitted to the email address with the subject line containing the position applied for. Paper-based submissions are not initially necessary. Applications must include:

(i) A cover letter that contains a brief research plan and how suited the plan is to the position applied for.
(ii) A full list of publications and contact information of at least five full professors who can act as referees.
(iii) Five representative works (include journal papers, monographs and patents).
(iv) Certificate of highest degree
ISTBI FAMILY