

The List of Winners to 2018 S.-T. Yau High School Sciences Awards

Grand Prize

Deerfield Academy
Students: Gerald Jiarong Xu
Advisers: Gu Xian Feng
Paper Title: Group Theory and Megaminx

Mathematics

Gold Prize

Deerfield Academy
Students: Gerald Jiarong Xu
Advisers: Gu Xian Feng
Paper Title: Group Theory and Megaminx

Silver Prize

Guangzhou No.6 Middle School
Students: Yuetong Li
Advisers: Bin Qu
Paper Title: Equichordal Curves on Simply Connected Surfaces of Constant Curvature

Bronze Prize

(1) International Department, the Affiliated High School of SCNU
Students: Zhaojun Chen
Advisers: Baoguo Hao
Paper Title: Pancyclicity and Cycle Length Distribution of Generalized Petersen Graphs

(2) Phillips Academy Andover
Students: Guanpeng (Andy) Xu, Wendy Wu
Advisers: Guangyi Yue
Paper Title: Second and Higher Gonality of Erdős–Rényi Random Graphs

(3) The Second High School Attached to Beijing Normal University
Students: Yibo Hu, Jiahao Guo
Advisers: Jiguang Bao
Paper Title: On Maximum Area of the Polygons with Given Side Lengths

Honorable Mention

(1) High School Affiliated to Fudan University
Students: Zhouyang Lu
Advisers: Dajun Xie

Paper Title: On Some Types of the Infinite Product

(2) Chengdu Shishi High School

Students: Ruijie Niu

Advisers: Weinian Zhang, Wei Li

Paper Title: A Study on Periodic Points of Tent Maps

(3) Ross Mathematics Program

Students: Luchen Shi, Sunay Joshi, Ritwick Bhargava

Advisers: Xiudi Tang

Paper Title: Congruence of Linear Symplectic Forms by the Symplectic Group

(4) High School Affiliated To Nanjing Normal University

Students: Ruixin Qiu, Gouruyue Yuan

Advisers: Dun Zhou, Suqiao Zeng

Paper Title: A Property of Integer-Valued Lyapunov Function for a Class of Totally Nonnegative Matrices

(5) Tsinghua University High School International-Chaoyang

Students: Lixin Li

Advisers: Qingming Yang

Paper Title: Directed Graph Method for Intelligent Vehicle to Orderly Pass through Unsignalized Intersection and Its Application

Physics

Gold Prize

Jinling High School

Students: Zhicheng LI, Yunbo Kang, Li Tian

Advisers: Qijun Zhang, Yang Ding

Paper Title: The Study of Movement Models of Chinese Traditional Water Sleeves

Silver Prize

The High School Affiliated to Harbin Normal University

Students: Zhaoyi Li

Advisers: Shiqiang Deng, Yongyuan Jiang

Paper Title: The Winding Pendulum Phenomenon-A study on Pendula with Azimuthal-length Constraint

Bronze Prize

(1) Shanghai High School

Students: Chenfei Miao

Advisers: Jianli Xu, Xiangting Li

Paper Title: Study on the Conductive Property of Flat Sample with Hole

(2) The High School Affiliated to Renmin University of China

Students: Yuheng Huang

Advisers: Xi Chen

Paper Title: Investigation on the Dynamics of Friction Induced Reciprocation

(3)Shanghai Kongjiang Senior High School

Students: Anyao Jiang, Hongying Yu

Advisers: Qunying Wu, Haiying Zhang

Paper Title: Experiment Study on Motion Mechanism of a Straw Placed in Carbonated Water

Honorable Mention

(1)Indian Springs School

Students: Jing Wang

Advisers: Cheng Ma

Paper Title: The Frequency Analysis and Resonance Simulation of Khoomei Singing

(2)Temasek Junior College & Anglo-Chinese Junior College

Students: Wang Jiwei, Wang Yiyang, Zhang Haoyu

Advisers: Dr. Victor Wang Peng Cheng, Mr. Khoh Rong Lun

Paper Title: Investigating the Aerodynamic Performance of Biomimetic Gliders for Use in Future Transportation

(3)The High School Affiliated to Renmin University of China

Students: Lansong Li, Junning Zhao

Advisers: Yongping Zhang

Paper Title: Rotation Study of Soft Magnetic Alloy Ring Under Thermo-Magnetic Interaction

(4)Guangzhou No.6 Middle School

Students: Zihao Wu, Yuwen Fu

Advisers: Bin Qu

Paper Title: Study on the Mechanism of the Forepart of the Sneakers Getting Wet when Walking on the Road with Standing Water

(5)Hangzhou Xuejun High school of Zhejiang Province (Xixi Campus)

Students: Yuening Yang, Yiling Zhuang, Wenyuan Xie

Advisers: Jing Huang, Weigang Qiu

Paper Title: The Rolling Motion of Constrained Three-Dimensional Rigid Bodies

Chemistry

Gold Prize

Changchun Jida Middle School Experimental School

Students: Yingji Li, Mingze Lu, Zirui Huang

Advisers: Shouhua Feng, Jinhua Li

Paper Title: The Abnormal Shrinkage of Water Volume and the Mechanism

Silver Prize

The Affiliated High School of SCNU

Students: Muyin Yao

Advisers: Fang Zhu

Paper Title: In Vivo Tracing of the Effect of Microplastic Pollution on Salicylic Acids and Organophosphorus Pesticides Uptake in Aloe

Bronze Prize

(1)Chongqing Nankai Middle School

Students: Dinghan Liu

Advisers: Shengbin Chen, Lingjie Li

Paper Title: Fabrication and Mechanism of Reversible Wettability (Hydrophilic-Oleophilic) Sponge

(2)International Department, The Affiliated High School of SCNU

Students: Zeyu Wang

Advisers: Jinzhi Du

Paper Title:Preparation of Tumor Hypoxia Sensitive Nanomotors

(3)Nanjing Foreign Language School

Students: Haiping Zhang, Xinyi Wang

Advisers: Liangliang Xu, Yiwu Quan

Paper Title: Synthesis and Characterization of AIE-Active Chiral Binaphthol Derivatives for Oleds with Circularly Polarized Luminescence

Honorable Mention

(1)Beijing National Day School

Students: Wenkai Fan

Advisers: Wang Shu, Mingjun Teng

Paper Title: New Use of Drug, Galanthamine as both Amyloid-Beta Inhibitor and AChE Inhibitor

(2)Changjun High School

Students: Zhongri Zhong

Advisers: Yun Liang

Paper Title: Synthesis of Highly Functionalized Quinoline Derivatives via the Ring-Expansion Reaction of Indole Derivatives

(3)Shanghai Foreign Language School Affiliated to SISU

Students: Shicheng Hu

Advisers: Gengfeng Zheng

Paper Title: Silk Derived Highly Dispersed Ni supported by N-Doped Carbon Nanosheet toward Electrochemical CO₂ Reduction

(4)Nanjing Foreign Language School

Students: Yuewei Zhou, Hanyue Wang, Shiwen Fang

Advisers: Liangliang Xu

Paper Title: Achieving Freestanding Rich-Mixed-Valence Mn_xCoySz/CNT Film Electrodes Toward Foldable Ultrahigh Volume Energy Density All-Solid-State Supercapacitors

(5)Beijing No.4 High School

Students: Ziqi Pan

Advisers: Liyan Kong, Jiayu Xin

Paper Title: Research on the Conversion of Waste Straw into High-octane Gasoline

Biology

Gold Prize

High School Affiliated to Shanghai Jiaotong University

Students: Lin Zhan

Advisers: Zhaofan Xia, Pengfei Luo

Paper Title: Designed 3D scanning system to achieve the spatial uniformity of the optimal pressure value of pressure therapy

Silver Prize

(1)The High School Affiliated to Renmin University of China

Students: Jinyun Wang

Advisers: Weifeng Nian, Linlan Zhuang

Paper Title: A Novel Path Employing Luminescent Bacteria as A Light Source to Improve the Growth of Microalgae in Bioflim-Based Cultivation

(2)The High School Affiliated to Renmin University of China

Students: Yanwei Li, Yongxin Huang, Fengyi Wang

Advisers: Ya Dai, Xiangming Wang

Paper Title: The Reduction of Caenorhabditis Elegans Offspring's Learning Ability Caused by Ethanol Stimulation and Possible Correlations with Epigenetic Modification of Synaptic Function-Related Genes

Bronze Prize

(1)The Second High School Attached to Beijing Normal University, International Department

Students: Weihang Guo, Boxuan Li, Gaoyu Zhou

Advisers: Chuan Ni, Xuan Wang

Paper Title: Construction and Characterization of a Bio-Detector for Inflammatory Bowel Disease

(2)The First High School of Changsha, Hunan

Students: Chenxi Zeng

Advisers: Jianjun Gao

Paper Title: Study on a Novel Analgesic Peptide from the Digestive Juice of Land Leeches

Honorable Mention

(1)Hangzhou No.2 High School of Zhejiang Province

Students: Ouyuan Xu

Advisers: Shihua Wu, Xiongwei Huang

Paper Title: Identification of the Gene Deficiency Responsible for White-Flowered Butterfly Pea and Potential Applications for Genetic Engineering of Flower Color

(2)No.2 High School of East China Normal University

Students: Chenghan Xie

Advisers: Yao Qu

Paper Title: Research on the Effects of Plant Audio Technology on the Growth and Pathogenicity of Fungi—— A New Physical Sterilization Technology

(3)Chengdu NO.7 High School

Students: Puyue Zou, Chulin Cao

Advisers: Yang Tang, Jingjing Tang

Paper Title: A New Discovery of the Key Stress Protein HSP90 in Regulating the Regenerative Ability of the Planarian

(4)Karamay No.1 Middle School

Students: Yiran Li, Lijia Yang, Longyu Lin

Advisers: Shanshan Song, Jun Wu

Paper Title: A Preliminary Study of a New Inoculation Method for "Jinhua" Fungus on Fermented Fu Tea

(5)The Second High School Attached to Beijing Normal University, International Department

Students: Wenrui Zhang

Advisers: Defeng Chen

Paper Title: Isolation of Antiphytopathogenic Bacteria from Soils in Beijing and Initial Investigation of Their Antifungal Activity

Computer

Gold Prize

Shandong Experimental High School

Students: Dongfeng Li, Zhirui Li

Advisers: Lei Shi

Paper Title: SO₂ Emission Prediction of Huangtai Power Plant Using Variable Selection and BP Neural Network

Silver Prize

ChengDu HuaYang High School

Students: Siwan Bian, Sheng Meng, Dehua Liu

Advisers: Minsheng Song

Paper Title: Bicycle-sharing Smart Lock System

Bronze Prize

(1)Changchun Jida Middle School Experimental School

Students: Jiachun Qi

Advisers: Jinhua Li

Paper Title: Table Tennis Recognition and Positioning Based on Monocular Vision and Faster-RCNN

(2)Shanghai World Foreign Language Academy

Students: Ye Shu

Advisers: Jianhua Li, Jun Wu

Paper Title: Binary Reed-Solomon Coding Based Secure Distributed Storage Scheme and Test-Bed for Information-Centric Fog Networks

(3)Kent School
Students: Peiyuan Liao
Advisers: Matthew Austin
Paper Title: Deep Neural Network Based Subspace Learning of Robotic Manipulator Workspace Mapping

Honorable Mention

(1)Cranbrook Schools
Students: Yang Chen
Advisers: Jazon Zhao
Paper Title: Active Learning over DNN: Automated Engineering Design Optimization for Fluid Dynamics Based on Self-Simulated Dataset

(2)The High School Affiliated to Renmin University of China
Students: Zhehan Kang
Advisers: Ali Mirtar
Paper Title: Translation System from Natural Language to Sign Language by Using Hamnosys

(3)Shanghai High School
Students: Yixuan Mei
Advisers: Zhongding Jiang, Yiming Wu
Paper Title: Compound Object-Detection Algorithm for Eye Tracking in Virtual Reality Head-Mounted Display

(4)Hangzhou Foreign Language School
Students: Zhihan Xu, Baoqi He, Xueqiang Xu
Advisers: Tieming Chen
Paper Title: Domain Knowledge Graph Integrated Intelligent Question Answering System for Childcare

(5)Guangzhou No.6 Middle School
Students: Yongxiang Meng, Wenyan Chen
Advisers: Jingyun Liang
Paper Title: LittleGAN: Conditional Facial Image Generation and Adjustment

Economic and Financial Modeling

Gold Prize

International Department, The Affiliated High School of SCNU
Students: Shiyu Wu
Advisers: Hailan Chen
Paper Title: The Role of Big Data in Smart Tourism: A Case Study of Understanding Museum Visiting Behavior

Silver Prize

Wuhan Britain-China School
Students: Weilai Zhao, Xingyu Gong, Liujia Zhang

Advisers: Hu Xueying
Paper Title: The Modeling of Water Resources in China

Bronze Prize

(1)Nanjing Foreign Language School
Students: Ruijie Zhai、Fei Peng
Advisers: Yuwei Wang
Paper Title: How to Mitigate the Influence of Market Competition on Financing Constraints of Small and Medium-sized Enterprises

(2)Changchun Jida Middle School Experimental School
Students: Siyuan Zhou, Jinchu Cui, Xiangzhou Lyu
Advisers: Jinhua Li
Paper Title: Ladder-pricing Eases National Day Holiday Highway Congestion——Mathematical Model of Consumer Behavior Based on the Perspective of Price Discrimination

(3)Nanjing Foreign Language School
Students: Chongnian Tao
Advisers: Qing Yan
Paper Title: A Study on Constructing Credit Card Fraud Detection Models

Honorable Mention

(1)Nanjing Foreign Language School
Students: Ruoxi Yang, Hetu Li, Xiaotian Tian
Advisers: Qiang Wu
Paper Title: A Comparative Study on Online and Offline Pricing of Chain Brand Merchant on the Catering Takeaway Platform

(2)The High School Affiliated to Renmin University of China
Students: Peixuan Tong
Advisers: Junchao Peng, Tengda Xu
Paper Title: A Discussion on Inverted-U Shape Relationship between Social Autonomous Consumption and Medical Insurance Fund Size

(3)Beijing No.4 High School
Students: Shixing Xu, Jiayuan Liu
Advisers: Zhou Zhang
Paper Title: The Effect of the Bitcoins Inclusion of on a Port folio Typical to Chinese Investors

(4)Princeton International School of Mathematics and Science
Students: Lixin Huang
Advisers: Gong Xiang
Paper Title: Some Empirical Studies on Chinese Crude Oil Futures

(5)Tsinghua University High School
Students: Zhaoyang Tian, Cheng Qian,
Advisers: Hao Wu, Dianjun Wang
Paper Title: Evaluation and Prediction of Cell Phone Sales Based on Various Techniques