KUANG RENKUN

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EDUCATION

Tsinghua University China, *Sep 2018 - Present*
Pursuing the Ph.D. degree, interested in broad Physics and Aerospace Engineering, mainly focusing on Radio Astronomy and Gravitational Lensing.
Department of Engineering Physics and Department of Astronomy

Technical University of Munich Germany, *Oct 2017 - Mar 2018*
Department of Mechanical Engineering (Exchange program)
Selected through a rigid academia evaluation process organized by the China Scholarship Council (CSC), I was awarded a scholarship under the State Scholarship Fund of China to pursue study as a visiting student of TUM.
Courses: Nuclear Astrophysics, Modern X-ray Physics, Technology and Application of future nuclear reactor, Advanced Control, Control of Discrete Event Systems, Selected Topics on Safe Embedded Systems
Total Credits: 33, GPA: 1.4

Harbin Institute of Technology China, *Sep 2014 - Jun 2018*
Bachelor of Engineering, Aerospace Science and Technology, School of Astronautics.
Major GPA: 92/100, ranked 1/20

PROJECTS

Gravitational Lensing *Oct 2019 - Present*

All-Sky Nanosecond-Response Radio Interferometry *Sep 2019 - Present*
Limited by long response time and not sufficiently large field of view, today's radio telescopes are not efficiently enough to detect various phenomenons like the Fast Radio Bursts or the EM counterpart of GW events, so here comes this project.

Accurate Locating and Measurement of Work-pieces *Apr 2018 - Sep 2019*
Under the guidance of my Ph.D. supervisor, Prof. Zhou Jianfeng in Tsinghua University, I am developing a computer vision based solution for accurately locating and measuring the size of small work-pieces based on the picture taken by an industrial camera. This method of accurately locating and measuring in sub-pixel accuracy can also be applied to processing astronomical images. A paper summarizing this work is in preparation (codes available at https://github.com/rkkuang/Rec_fitting_non_lin_opt).

A new de-dispersion method of pulsar profile *Jul 2019 - Present*
Pulsar signals suffer from propagation effects(e.g. "dispersion") when travel to Earth through the ISM. The amount of dispersion is related to the integrated electron density along the line of sight, known as the dispersion measure (DM). However, the DM is generally not known in advance. Therefore, conventional brute force search algorithm must search over a large range of possible DMs, to find the optimum DM that achieves the highest S/N for a suspect detection, which is not accurate enough and computationally efficient. I am currently working on designing a new method by deriving a cost function which can be optimized to achieving the de-dispersion for searching for pulsar signals.

Searching for Exoplanet using Python *Oct 2018 - Present*
After given a talk about TESS in a student seminar hosted by Prof. Bai Xuening, I begun to study by myself the data processing pipeline of searching for transiting exoplanets, using python and Kepler/TESS data-sets. I am currently working on developing a faster and more automated method to searching for signals of multi-planets systems.

Galaxy Morphology Classification Using Deep Learning *Mar 2019 - Present*
The shapes of Galaxies provides wealth of information about our universe. Image classification accuracy is greatly improved thanks to the efforts of researchers in CS. I am currently working on applying

the newest image classifying methods to galaxy morphology classification using larger data-sets cover a wide range of red-shifts.

TECHNICAL STRENGTHS

Programing	Python, Matlab, C/C++
OS, Software & Tools	Linux, LaTeX, Labview, Mathematica, CASA, Difmap

INTERNSHIP IN INDUSTRY

Ningbo Xingfan Information Technology Co., Ltd.,China *Aug 2017*
During the internship, I achieved a high precision image matching algorithm and a super resolution image reconstruction algorithm based on Matlab.

EXTRACURRICULAR ACTIVITIES

2017
Summer camp for excellent college students in nuclear subject of Tsinghua University THU, China
Participated in the 3rd all-Russia aerospace festival Russia's Amur State University, Russia
Minister of SICA International Exchange Association of School of Astronautics HIT, China
2015
Second Prize of Winter Vacation Social Practice of College Students HIT, China

HONORS & AWARDS

2018 - Present
Future Scholar Scholarship of Tsinghua University THU
2017
National Encouragement Scholarship (5,000 Yuan) Ministry of Education, China
2016
Selected as Project Leader Talents (73 students selected over whole university, everyone was awarded 10,000 Yuan as project fund) HIT
2rd Prize in province of China Undergraduate Mathematical Contest in Modeling China Society for Industrial and Applied Mathematics
Aoyi Scholarship (10 quotas/year, 10,000 Yuan) Beijing Aoyi new energy resources technology co. LTD.
Merit Student of Harbin Institute of Technology HIT
First Prize of People's Scholarship HIT
Outstanding League Cadres of Harbin Institute of Technology HIT
2015
2rd Prize of 7th Chinese Mathematics Competition Chinese Mathematical Society
National Encouragement Scholarship (5,000 Yuan) Ministry of Education, China

CONFERENCES ATTENDED

2020
The 24th International Microlensing Conference Beijing
2019
2019 SKA Shanghai Meeting: Concluding our Past, Realising our Future Shanghai
2018
The 4th Chinese SKA Summer School Shanghai