Jinsoo Park CV

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Physics
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https://jinsoopark.com
github.com/parkji30

RESEARCH INTERESTS

Studying the inefficiency in star formation and polarization from magnetic dust grains using high powered telescopes such as BlastTNG.

Investigating the distribution of dark matter in nearby galaxy structures using SuperBIT, a super pressurized high powered balloon borne telescope.

I also enjoy engaging in literature in cosmology, computational physics, machine learning and abstract math.

EDUCATION

Master of Science - Physics/Astronomy
Queens University, Kingston, ON   2020 – 2022
Thesis - Observing Star Formation with High Powered Telescopes

Bachelor of Science - Math
University of Toronto, Toronto, ON   2014 – 2020
Thesis - Compression Algorithm for Super Pressurized Balloon Borne Telescopes

RESEARCH EXPERIENCE

(Star Formation & Relativity) Fissel Group   2020 – Present
Research Assistant, Kingston, ON   Queens University
- Under the supervision of Dr. Laura Fissel, worked on the BlastTNG collaboration project.
- (Current) Working on developing an optimal compression algorithm for time stream data sent via bandwidth.
- (Current) Designed the instrumentation and the software for the control system of the pointing sensors.
- Developed an optimal astrometry solve-field script using Python that automatically records found solutions.
- Developed a filtering software used to purify images obtained by BlastTNG.

(Observational Cosmology) Netterfield Group   2019 – 2020
Research Assistant, Toronto, ON   University of Toronto
- Under the supervision of Dr. Barth Netterfield, worked on the SuperBIT collaboration project.
- Using Python, developed an optimal image compression algorithm for SuperBIT.
- Developed a pseudo astronomical image simulation program that generates images with similar parameters obtained by SuperBIT.
- Developed a simulation program to analyze the distortion in critical features pre and post compression.
- Obtained a compression factor of 5.15 for the densest image.

(Quantum Optics) Vutha Group   2018 – 2019
Research Assistant, Toronto, ON   University of Toronto
- Under the supervision of Dr. Amar Vutha, worked on the PolyEDM collaboration project.
- Developed a Python program that simulates magnetic fields over a region of 200,000 cartesian points.
- Created a numerical and analytical differential equation solver.
- Used AutoCAD to design a fully functional nitrogen shield vacuum chamber.
- Debugged and created new instrumentation equipment such as: RF switch boxes, diode temperature cables, DAC devices, etc.

TEACHING EXPERIENCE

Teaching Assistant (PHYS117)   2020 – Present
Queens University, Kingston, ON
- Designed and taught course material for first year physics students.
- Marked assignments, quizzes, tests, examinations.
- Held office hours to provide further assistance for students.

Lecturer   2018 – 2020
The Abelard School, Toronto, ON
- Developed an enriched and accelerated computer science curriculum for gifted high school students.
- Designed and lectures, assignments, and examinations according to the standards for the Ontario ministry of education.
- Taught lecture content both in-person and online.

COMPUTER SKILLS & DEVELOPED PROGRAMS

Over seven years of programming experience in Python, C/C++. Experienced in SQL, shell, bash, Java, HTML5, CSS, Javascript, Git.

Below are a few example of my most notable work. All of them and many others can be found on my github.

Automated Astrometry Solution Script (Python)
- An automated python script that records any found image solutions using Astrometry.

Multiprocessing Magnetic Beam Simulation Program (Python)
- A simulation program used to model a magnetic beam slower for the PolyEDM project.

Simulating Compression Algorithms for Astronomical Images. (Python)
- A simulation program that finds the most optimal compression algorithm for a given image.

Live Plotting Graphs with Socket Servers (Python)
- Records live data gathered from instrumentation devices which can be obtained through a SSH connection.

Flappy Bird Multiplayer Edition (C++)
- Flappy bird! Except, you can connect and play with others!

IDocuments (C++)
- a personalized e-passport that safely stores and reminds you of what documents and accounts you own.

SWEper (C)
- a free open source program that safely frees memory space in your hard drive.

PUBLICATIONS

- "Compression Algorithms for Super Pressurized Balloon Borne Telescopes", *University of Toronto Department of Physics Senior Thesis*

MEMBERSHIPS

Queens Graduate Physics Student Association
Canadian Scientific and Christian Affiliation
Society of Catholic Scientists

HONORS & AWARDS

Research Assistant Stipend, Queens University
Undergraduate Research Fund, University of Toronto

INTERESTS

Outside of academics, I enjoy reading theology, philosophy and mathematics literature. I am also an avid soccer player, enjoy going on long walks and playing the guitar.