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
- Worked on the pointing system and software design for BlastTNG.
- Developed an optimal compression algorithm that reduced the data storage size by a factor of 5.
- Designed and coded the pointing and control system for BlastTNG.
- Developed an optimal astrometry solve-field script using Python that automatically registers solutions.
- Developed a noise reduction software used to purify images obtained by BlastTNG.
- Implemented and tested the David-Chandrasekhar Fermi method on the Vela-C data 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.
- Developed an optimal compression algorithm with a compression factor of 5.15 for the densest SuperBIT image.
- 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.

(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.
- Studied the behavior of excited Yboh molecules travelling through a high powered molecular beam decelerator.
- Created a numerical and analytical differential equation solver.
- Used AutoCAD to design and construct a fully functional nitrogen shield vacuum chamber.
- Debugged and designed new instrumentation equipment such as: RF switch boxes, diode temperature cables, DAC devices, etc.

TEACHING EXPERIENCE

Teaching Assistant (PHYS118)   2020 – Present
Queens University, Kingston, ON
- Designed and taught course material for first year physics students.
- Marked assignments, quizzes, tests, examinations.

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.

WORKING EXPERIENCE

Manager   2016 – 2018
Toronto Gunners Soccer Club, North York, ON
- Handled administrative and financial tasks, obtained permits and registered player information with the Ontario Soccer Association.
- Engaged with fundraising activities and designed fundraising proposals to raise capital for club expenditures.
- Increased revenue by approximately 25000 dollars during tenure.

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
Queens Graduate Award, 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.