Liam Plybon

lplybon1@gmail.com
Contact: 5128182020
https://www.linkedin.com/in/liam-plybon-6bb054118/
2915 Park Terrace Dr. Apt 1
Loves Park, IL 61114
blablabliam.github.io

EDUCATION

Texas A&M University, College Station, Texas
Bachelor of Science, Physics, May 2019
Minor, Astrophysics
Commitment to Service Award

EXPERIENCE

Engineer — Astro-Phyiscs Inc.
11250 Forest Hills Road, Machesney Park, IL 61115 — July 2019 - Present
Assisted development of the Mach 2 mount, CP5 control system, and keypad. Overhauled the keypad and database to properly identify objects for the next 50 years. Designed wiring and circuit board elements, implementing the latest standards and technologies. Implemented a suite of Python test software. Identified new optical black paints to improve resilience and flatness. Managed equipment repairs for astronomical equipment ranging from observatory-scale 360lb mounts to 40 year old consumer electronics. Wrote manuals and provided advanced support for customers with remote observatories.

Student Assistant — Texas A&M University
College Station, TX — Sept. 2016 - May 2019
Performed data entry and analysis on for the Local Volume Database in Python and PostGRESQL. Later I was tasked with operating .5 m telescopes at the observatory to observe minor planets and exoplanet transits. Reducing observatory data with IRAF and Python, I assisted the observation of asteroid 6478 Gault when it developed a cometary tail.

Intern — ERCOT
Taylor, TX — May 2015 - August 2015
At ERCOT, I collaborated with a team of electrical engineers to renovate 300 aged onelines of the transmission grid, and update dozens of substation onelines after modification. I was also tasked with studying under the graduate interns to learn electronics theory.

Wontractor — Demidec
Los Angeles, California — May 2014 - August 2014
Wrote study material to be distributed nationwide regarding renewable energy.

PROJECTS

Development of Mount Control Test Systems: Developed a number of testing approaches to automate bottlenecks in mount assembly and deployment, using combinations of Arduino microcontrollers, Omega2 microcomputers, Python scripted data analysis and circuit board design. Reduced time spent testing by an order of magnitude while improving test quality to catch sub-arcsecond scale defects in mount control. Work done at Astro-Physics Inc.

Local Volume Database: Managed dwarf galaxy data sterilization, input, organization and management for the Local Volume Database in conjunction with Fermilab and researchers at Texas A&M University. I developed methods in Python for scraping web data, data query operations in PostGRESQL, and presented findings at the TAMU Astrophysics Symposium. Data collected and managed for this project was published in the paper Identification of RR Lyrae stars in multiband, sparsely-sampled data from the Dark Energy Survey using template fitting and Random Forest classification. *https* : *//arxiv.org/abs/*1905.00428.

1u Cubesat Quality Control/Payload: Led a team of 5 other students, directed research and developed the sensor payload and electronics suite for a 1u earth observation cubesat, with the goal of tracking piracy along the east African coastline. Helped develop a framework to track cargo ships the moment onboard radio equipment is disabled, augmenting coastal radar emplacements, Navy radar, and LoS observations. Presented to the SEDS Cubesat competition in 2019.
Advisor: Dr. Ryan Ewing.

Algorithmic Botany in Texas: Investigated the applications of modified Barnsley Fern fractals on modeling plants native to Texas. Findings included models of several fern species, as well as fungi and algae. Best fit models may provide easy parameterization of organism growth. Further research should include condition based experimentation and the resulting Barnsley parameter responses.
Guide: Dr. Ralf Rapp, Dept. of Physics, Texas A&M University

Statistical Analysis of Wide Binary Stars with GAIA DR 2: Analyzing the statistical number of wide binary pairs in the direction of the NGP. This will shed light on the completeness of current wide binary catalogs in the direction. Wide binary stars are a powerful fossil record of perturbation in the region, and can be used to infer dark matter activity in the past.

Open Source Clinostat: Designing a new Open Source clinostat to bring the price down an order of magnitude. This project will enable faster research on plant and fungal gravitational responses, and can be outfitted with different parts to perform unique lab functions.

SKILLS

Languages: Python, HTML, PostGRESQL, Java, Javascript, C++, LaTeX
Engineering: KiCad, OnShape, SolidWorks, SMT Soldering, 3D Printing
Astronomy Software: Deep Sky Stacker, APCC, TheSkyX, ASCOM, IRAF, Astropy
Operating Systems: Windows, Linux, Android, Mac

INTERESTS

Near Earth Objects, Exoplanets, Astrobotany/Astromycology, Dark Matter, Open Source Technology

Extracurricular Activities

Rockford Makerspace Ops Committee: Volunteer several hours a week operating a makerspace. Duties include teaching classes on intro electronics, tool maintenance, and building development.
2019 - 2020

Students for Exploration and Development of Space: Lead outreach programs on astrophysics and spaceflight with an organization of 100+ people.
2017 - 2019

Discover, Explore, and Enjoy Physics Program: Developed physics demonstrations including a terrella, magnon demonstrator, coupled metronome table, and a gravitational wave demo.
2017 - 2019

RELEVANT COURSES

Computational Physics
Quantum Mechanics I & II
Statistical Thermodynamics
Advanced Mechanics I & II
Stars and Extrasolar Planets
Optics and Thermal Physics