Jacob S Chesslo

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SUMMARY

Software engineer and technical lead with a foundation in physics and scientific computing, specializing in the infrastructure that enables aerospace software verification at scale. Currently at Blue Origin leading K9 and its next-generation successor K9X — core platforms for avionics task orchestration, testing, and verification across New Glenn, New Shepard, and other vehicle programs. Background spans high-energy particle physics research at CERN, HPC scientific software development, and full-stack production platform engineering.

PROFESSIONAL AND RESEARCH INTERESTS

- Theory of Everything (TOE), Grand Unified Theory (GUT)
- Space Exploration, Space Development, Space Urbanization, and Democratization of Space
- Subatomic Physics, Particle Physics, High Energy Physics
- Astrophysics, Cosmology, Cosmogony
- Alternative Computing, Quantum Computing
- Scientific Computing, High Performance Computing
- Artificial Intelligence, Machine Learning
- Diversity, Equity, and Inclusion (DEI)
- Behaviorism and Behavior Analysis
- Green, Renewable, and Sustainable Energy Production and Storage
- Environmental Sustainability and Societal Sustainability
- Organizational Leadership and Emotional Intelligence
- Philosophy of Science

EDUCATION

Master of Science in Computer Science *(Incomplete)*

2022 January – 2022 May

University of Central Florida - College of Engineering and Computer Science - Department of Computer Science

Orlando, Florida, United States of America

- GPA (4.00 scale): Overall: 4.00 Department: 4.00
- Computer Science Coursework: Quantum Computing
- Departed program after first semester to pursue a software engineering opportunity at Blue Origin

Bachelor of Science in Physics, Minor in Chemistry

2017 August – 2020 December

Florida Institute of Technology - College of Engineering and Science - Department of Aerospace, Physics, and Space Sciences

Melbourne, Florida, United States of America

- GPA (4.00 scale): Overall: 3.48 Department: 3.08 Minor: 3.75
- Graduation Honors: Cum Laude · Dean's List ×4 · Outstanding APSS Junior of the Year (2019) · Outstanding PSS Sophomore of the Year (2018)
- Unofficial Transcript
- General Coursework:
  - **Physics:** Quantum Mechanics, Electromagnetism, Physical Mechanics, Optics, Thermodynamics/Statistical Mechanics, Solid State Physics, Modern Physics, Subatomic Physics, General Physics, Space Sciences, Circuit Theory
  - **Chemistry:** General Chemistry, Organic Chemistry, Physical Chemistry

- **Mathematics:** Calculus, Linear Algebra, Discrete Math, Complex Variables, Differential Equations, Partial Differential Equations
- **Notable Organizations:** Student Astronomical Society (SAS); Students for the Exploration and Development of Space (SEDS); Society of Physics Students (SPS); Student Rocket Society (SRS); Astrobiological Research and Education Society (ARES); Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter; Phi Eta Sigma Honor Society; Rainbow Alliance; Student Government Association (SGA); Order of Omega Greek Honor Society

High School Diploma

2013 August – 2017 June

Albert Gallatin Senior High School Uniontown, Pennsylvania, United States of America

- GPA (weighted): Overall: 4.5
- Graduation Honors: Summa Cum Laude · Graduation Speaker · Fayette County Student Achievement Award (2017)
- Scouting: Eagle Scout (2016, Boy Scouts of America) · Order of the Arrow (2015, Boy Scouts of America)
- **Notable Coursework:**
  - **Advanced Placement (AP):** Physics C: Mechanics, Calculus AB/BC, United States History, English Language and Composition, Macroeconomics, United States Government and Politics, English Literature and Composition
  - **College in High School (CHS):** Chemistry, Physics, Calculus
- **Notable Organizations:** National Honor Society, Future Business Leaders of America, Band (Drumline), Young Astronauts Club, Varsity Academic League, Debate Team, Math Team, Drama Club

HONORS AND AWARDS

Professional

- Outstanding Contribution Award — Blue Origin (2024)
- Blue Star Peer Recognition — Blue Origin (2023)
- Peer-to-Peer Recognition Award — Blue Origin (2022)
- Five internal team recognition awards — Blue Origin (2022)

Academic

- Cum Laude — Florida Institute of Technology (2020)
- Dean's List ×4 — Florida Institute of Technology
- Outstanding APSS Junior of the Year — Florida Institute of Technology (2019)
- Outstanding PSS Sophomore of the Year — Florida Institute of Technology (2018)
- Summa Cum Laude — Albert Gallatin Senior High School (2017)
- Graduation Speaker — Albert Gallatin Senior High School (2017)
- Fayette County Student Achievement Award (2017)

Organizational and Service

- Fraternity Man of the Year — Florida Institute of Technology Office of Fraternity and Sorority Life (2021)
- Order of Omega Inductee — Florida Institute of Technology Office of Fraternity and Sorority Life (2019)
- Rev. Dr. Fredrick Dobens, H.B. Scholarship — Pi Lambda Phi Educational Foundation (2020)
- Legacy Award · Active Alumni Award · Lamp of Knowledge Award — Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter (2021)
- Gold and Purple Award · Campus Involvement Award · New Member Award — Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter (2019)

Scouting

- Eagle Scout — Boy Scouts of America (2016)
- Order of the Arrow — Boy Scouts of America (2015)

EXPERIENCE AND EMPLOYMENT

Software Engineer III

2025 August – Present

Software Engineer II 2023 August – 2025 August

Software Engineer I 2022 October – 2023 August

Blue Origin, Advanced Concepts and Enterprise Engineering, Engineering Productivity/Engineering Platforms Kent, Washington, United States of America

- Led technical development of K9, Blue Origin's core avionics task orchestration and verification platform — running millions of tasks per year across hundreds of environments at 99.99%+ uptime, on the critical path to major launch and verification campaigns.
- Currently leading development of K9X, a ground-up successor to K9 built against NIST 800-53, NIST 800-171, and NASA NPR 7123 from day one; extends platform reach to large-scale HPC workloads using an AI-first development methodology.
- Designed architecture roadmaps (2024–2026) and executed high-priority epics, balancing rapid delivery with long-term maintainability.
- Implemented K9 Task Caching mechanism, reducing hardware environment queue times and saving over 386 days of compute time across major programs within 3 months of implementation.
- Optimized networking stability, multipart S3 uploads, and retry logic, unblocking key verification workflows for geographically distributed teams.
- Created k9core shared library: 40+ releases in 2024 with best-in-class test coverage, static analysis, and API consistency, driving company standards.
- Implemented authentication and authorization for the platform, enabling secure, multi-team access control across hundreds of environments.
- Refactored Terraform deployments into reusable modules; standardized executor starter templates; improved Ansible deployment workflows.
- Developed engineering patterns adopted across the team — including CI/CD pipeline patterns, build workflow security improvements, and HTTP client abstractions — reducing friction for other engineers and standardizing approaches across services.
- Designed and implemented full-stack integration between internal traceability, requirements management, and source control platforms, enabling automated verification reporting across New Glenn, New Shepard, Engines, and ADP programs; work that started as a single integration became the foundation for verification workflows relied on across the company.
- Authored tooling enabling automated verification documentation integration, reaching thousands of downloads and supporting adoption across multiple vehicle programs.
- Contributed additional platform features including version-tagged source control endpoints, a significantly faster event retrieval API, and an initial prototype of a third-party code review tool integration — expanding platform capability and informing subsequent product direction.
- Developed deep working knowledge of aerospace safety-critical software development standards (DO-178, DO-254, DO-330) and applied this to build tooling that made compliance workflows faster and more rigorous across HIL, PIL, and SIL environments.
- Achieved AS9115 Cyber Compliance for platforms, ensuring regulatory alignment for avionics software verification workflows.
- Acted as primary point of contact for internal customers in Lunar, New Glenn, and Engines verification teams.
- Delivered rapid-response fixes for critical verification blocking issues; recognized for exemplary customer focus.
- Served as primary — and at times sole — engineer responsible for K9 through the most critical period of New Glenn's verification campaign, maintaining platform stability and delivering new capabilities while the entire company-wide verification effort depended on it.
- Architected and delivered a major K9 executor stability overhaul (v9.0) and initiated the k9core shared library as the foundation for ecosystem-wide consistency and release velocity.
- Expanded avionics testing platform team from 1 to 2 engineers; onboarded and mentored new hires, ensuring knowledge transfer and collaborative work culture.

- Led exploration, documentation, and architectural planning for a legacy radiation analysis orchestration platform, enabling a successor overhaul by a new team member.
- Finalized modernization of processor-in-the-loop test environments; expanded edge-case documentation and established consistent standards for environment recovery.
- Led major API modernization and WebSocket-based communication rollout, eliminating database inefficiencies and reducing polling overhead; achieved p99 latency consistently below 1 second.
- Drove iterative developer experience improvements across multiple client releases: executor reservation support, improved SSH session lifecycle management, task definition ergonomics, machine-friendly CLI output, and improved handling of large repositories.
- Designed and delivered a standalone UI application decoupled from legacy infrastructure, reducing user friction and enabling expanded self-service testing workflows.
- Designed and implemented ephemeral executor deployment patterns on Kubernetes, demonstrating scalable on-demand executor configurations for downstream teams.
- Conducted a structured platform user survey, using results to directly inform roadmap prioritization and product direction.
- Removed deprecated runtime support and maintained ecosystem alignment with current, secure language versions across the platform.
- Contributed to defining Engineering Platforms team roles, responsibilities, and interview resources as the team scaled.
- Co-led certificate infrastructure migration and implemented role-based access control, aligning the platform with evolving security and compliance requirements.
- Provided direct technical support for mission-critical test campaigns across multiple business units and vehicle programs, consistently unblocking verification and launch efforts.
- Authored comprehensive documentation (cookbooks, FAQs, reference guides) and built an executive statistics dashboard providing business-level visibility into platform usage; designed and implemented a representative load testing framework to catch performance regressions pre-deployment.
- Created an AI-powered hiring assistant adopted by 28 interviewers with a 75% satisfaction score, compressing hours-long preparation workflows into minutes.
- Active member of the Bar Raiser program: completed 25 interviews across 8 positions resulting in 6 offers, maintaining 4.0+/5.0 feedback scores; contributed directly to 3 team hires; served as Blue Guide for new team members.
- Active participant in 5 Business Resource Groups (BRGs) and Pride Planning Committees; authored Pride Parade announcement presented to ~300,000 attendees in Seattle.
- Participant in New Mercury Mentorship Program and member of Club for the Future.
- *Recognition:* Outstanding Contribution Award (2024) · Blue Star Peer Recognition (2023) · Peer-to-Peer Recognition Award (2022) · five internal team recognition awards (2022)

Scientist II

2021 March – 2022 October

ENSCO, Inc. - Mission Systems Group Melbourne, Florida, United States of America

- Supported the ongoing and active development of new technologies, computational and physical models, and software to solve real-world engineering, defense, environmental, scientific, and computational problems.
- Designed, developed, tested, and maintained parallel High-Performance Computing (HPC) cluster scientific software and programs to customer and academic requirements. Mix of MPI (OpenMPI, IntelMPI), C, C++, Fortran, Python, Make, CMake, pip, Anaconda, SIAL, and Julia software and build stacks.
- Refactored, updated, and optimized code into modern, maintainable, and scalable codebases and solutions.
- Worked in an Agile environment utilizing Atlassian Jira, Atlassian Confluence, and Jenkins for Scrum management.
- Established code reviews for scientific software teams. Led and modeled better software development practices for scientists, such as centralized version control.
- Mentored an intern that transitioned to a full-time position.
- Successfully migrated legacy MATLAB seismic software architecture used by the Department of Defense into modern Python and MySQL-based solution.

- Built software tools to assist other physical scientists and developers. Notably, created a tool to reduce the end-to-end analysis workflow time used by six other scientists by 10x.

Project: ACES 4

- Supported the development, maintenance, testing, and expansion of ACES (Advanced Concepts in Electronic Structure Theory), which is a parallel ab initio computational quantum chemistry software package.
- Designed, developed, tested, and maintained developer and user-facing utilities, pre-processing utilities and optimizations, post-processing utilities and thermodynamic scripts, and general optimization utilities. Used largely Python, Fortran, C, C++, and Make/CMake software and build stack. Specific examples include Hessian calculations, best-first-guess initializations and optimizations, and Python-based drivers and software bindings.
- PyACESTests: Developed and maintained functional and non-functional testing architecture and test-cases, including unit tests, integration tests, system tests, stress tests, performance tests, and security tests.
- PyCluster: Developed and maintained Pythonic High-Performance Computing (HPC) workload management scheduler toolkit, which abstracted the specific scheduler software used (such as Slurm, Portable Batch System (PBS), Torque) in a specific computing cluster.
- PyACES: Developed and maintained Python-based ACES toolkit for running jobs, parsing data, manipulating geometries, and analyzing results.

Project: Fermantic

- Creator of Fermantic, an object-oriented Python package for general Infrared (IR) spectroscopy analysis. Maintained the package and led a team of physical scientists and software developers in further development, including adding new features, integrating new data sources and physical models, debugging, testing, optimizing, and supporting software deliveries to established and new customers and research sites. Fermantic contains comprehensive fetching and parsing various data sources, applying physical phenomena such as rotational and/or vibrational broadening to physical data, data visualization, data analysis, and statistical analysis of models.
- Reduced the computational complexity and effective runtime and memory usage of algorithms, such as broadening algorithms. Notably, reduced the runtime of the original bottleneck algorithm by over 5 orders of magnitude (from hours to now millisecond runtime).
- Designed and implemented overall architecture, algorithms, data structures, unit tests, integration tests, system tests, and data pipelines.
- Examples of the parsing and utilization of existing and new common and scientific data formats include Gaussian16 output, CFOUR + Guinea output, ACES input and output, JCAMP-DX, Hitran, Geisa, APCS, JSON, XML, YAML, CSV, and Excel files.
- Constructed, implemented, and optimized new models and algorithms to account for various physical phenomena, such as rotational-vibrational effects, temperature broadening, and pressure broadening on infrared spectra.

Project: Quantum Chemistry and Infrared Spectroscopy Modeling

- Simulated chemical molecular, composite, and solid-state systems ab initio quantum mechanically in computational chemistry programs via High-Performance Computing (HPC) clusters.
- Ran Gaussian (version 16), Gaussview, GAMESS, ACES (versions 3, 4), CFOUR (versions 2, 3; Guinea versions 1, 2, 3), PySCF, and Psi4 software.
- Utilized various computational methods: Hartree-Fock (Restricted Hartree-Fock / RHF and Unrestricted Hartree-Fock / UHF), Self-Consistent Field (SCF), Density-Functional Theory (DFT) with functionals, Many-Body Perturbation Theory (MBPT), Møller-Plesset Perturbation Theory, and Coupled-Cluster Theory (CC).
- Periodically led three other scientists in reviews to analyze differences between computationally produced data and experimentally derived infrared (IR) data.
- Reevaluated the models and methods other scientists use in computational quantum chemical calculations and internal software tools to achieve higher-order ab initio agreement between experimental data and computational data while balancing customer requirements and timetables.

Project: Blackbird, Infrasound Propagation Software

- Integrated new data formats into and expanded the capability of legacy, parallel high-performance computing (HPC) cluster infrasound acoustic propagation program, optimized for up to 16 nodes.
- Specifically, integrated Ground-to-Space (G2S) Meso data format capability and subsequent expansion of simulation height from 30km from Weather Research and Forecasting Model (WRF) netCDF data format to 100km. Utilized Fortran, C, C++, OpenMPI, IntelMPI, CMake/Make, netCDF WRF data format, and MesoG2S data format.

Research Assistant

2018 August – 2020 December

Florida Institute of Technology - High Energy Particle Physics (HEP) Group - Hohlmann Research Group Melbourne, Florida, United States of America

- Member of the Hohlmann Research Group, advised by Dr. Marcus Hohlmann, which is under the High Energy Particle Physics (HEP) Group at Florida Institute of Technology

Project: Vector-Portal Search for Dark Matter Particles via Dark Electrodynamic Force in CMS

- Supported Dr. Mehdi Rahmani's Dissertation, advised by Dr. Marcus Hohlmann
- Utilized existing and emerging software and technologies from European Organization for Nuclear Research (CERN), specifically from and for the use of the Compact Muon Solenoid (CMS) experiment.
- Simulated and analyzed proton-proton interactions, utilizing MadGraph, Pythia8, and CERN ROOT. Primarily used novel particle physics models which produced dark electromagnetic Beyond the Standard Model (BSM) particles. These dark particles, decayed from dark scalar bosons or dark fermions in the model, subsequently decayed into Standard Model (SM) particles at certain energies, such as muons.
- Automated combinatorial input generation with Bash, such as with various particle energies, physical models, and collision cross sections. Submitted central CERN High-Performance Computing (HPC) cluster job requests.
- Utilized CERN's Linux Public Login User Service (LXPLUS6, Scientific Linux CERN 6 (SLC6), LXPLUS7, CERN CentOS 7) for simulations, job input creations, job generations, and job submissions.
- Collaborated with scientists and engineers from various international universities and with CERN who were working on similar Beyond the Standard Model electromagnetic models.

Project: Low-Density, Modular Gas Electron Multiplier (GEM) for Electron-Ion Collider

- Designed, drafted, machined, and constructed custom plastic and carbon-fiber composite bodywork using Autodesk Inventor and Fusion 360 for use in prototype modular low-density gas electron multiplier (GEM).
- Constructed, reconstructed, simulated, and troubleshot local prototype low-density GEM for operability and density optimization.
- Developed and ran particle-accelerator and detector simulations, specifically focusing on GEM detectors for use in the Electron-Ion Collider (EIC), using EICRoot within a Docker container.

LEADERSHIP, SERVICE, AND VOLUNTEER EXPERIENCE

President

2022 February – 2024 February

Pi Lambda Phi Fraternity Florida Delta Upsilon Alumni Association

- Leads the Board of Trustees and corresponding Executive Officers. Facilitates open communication between the Alumni Association, its Board of Trustees, Chapter Coaches of the Florida Delta Upsilon Chapter of Pi Lambda Phi Fraternity, and auxiliary organizations including the Pi Lambda Phi Fraternity International Headquarters, Florida Delta Upsilon Chapter of Pi Lambda Phi Fraternity, Florida Institute of Technology.

Board of Trustees

2021 February – Present **Pi Lambda Phi Fraternity Florida Delta Upsilon Alumni Association**

- Supports the general operations of the Alumni Association, including advising the Florida Delta Upsilon Chapter of Pi Lambda Phi Fraternity and curating the annual Alumni Weekend event.

- *Recognition:* Legacy Award · Active Alumni Award · Lamp of Knowledge Award (all April 2021, Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter)

New Member Educator

2020 November – 2021 March

Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter

- Chaired the New Member Educator Committee in educating and integrating new members into the organization, leading three New Members into the organization during the COVID-19 Pandemic.
- Notable Accomplishments: Compiled and expanded resources available for future New Member Educators including presentations, handouts, calendars, and projects

Advisor

2020 January – 2021 December

Rainbow Alliance at Florida Institute of Technology

- Advises President alongside other Faculty and Alumni Advisors
- Notable Accomplishments: Advised organization through the COVID-19 Pandemic and multiple leadership changes. Advised Florida Tech Pride Week planning

President

2019 November – 2020 November

Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter

- Chaired Executive Board of 6; Acted as liaison between the Office of Student Life, other Greek Organizations, International Headquarters, Alumni Chapter, and Chapter; Developed short and long term vision and goals of the Chapter
- Notable Accomplishments: Responded to the COVID-19 Pandemic and helped individuals transition from a largely in-person and social-based organization to one that is largely virtual; Developed a social safety support program for attendees of chapter sponsored events open to nonmembers (Angel Shot program: social safety program); Led construction of a membership dues collection system that resulted in 100% membership dues collection; Initiated research into chapter housing
- *Recognition:* Fraternity Man of the Year (February 2021, Florida Institute of Technology Office of Fraternity and Sorority Life) · Rev. Dr. Fredrick Dobens, H.B. Scholarship (May 2020, Pi Lambda Phi Educational Foundation)

Social Media Director

2020 January – 2020 October

Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter

- Periodically designed and uploaded content on Instagram, Facebook, and Snapchat for advertising events, increasing engagement, and recruiting new members; Developed and initiated an outreach program to help develop a recruitment list
- Notable Accomplishments: Doubled social media following and engagement on Instagram; Established guidelines for periodic value-based posting; Established Chapter brand guidelines

Contributor

2019 April – 2020 December

Florida Institute of Technology Greek Life Task Force

- Analyzed previous five-year plan and reestablished new five-year goals and vision for the Greek Life Community at Florida Institute of Technology alongside other Greek Life Community members, the Coordinator of Greek Life, and the Director of Student Life

Senate Academics Committee Chair

2019 January – 2020 May

Student Government Association at Florida Institute of Technology

- Led committee composed of an average of six members in hearing and responding to students' concerns regarding academic affairs at the University

- Notable Accomplishments: Reinstated Professor of the Year program; Led largest Florida Institute of Technology Student Government Association study of individual Colleges and Departments and Schools

Vice President of Education and Development

2018 November – 2019 November

Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter

- Supported the President as second-in-succession; Organized Scholarship, Philanthropy, Constitution, New Member Education, and Ritual committees
- Notable Accomplishments: Implemented transition documents for the transfer of power for all six Executive Board positions; Implemented Academic Support System strategy to increase chapter GPA average by 0.2 in two semesters
- *Recognition:* Gold and Purple Award · Campus Involvement Award · New Member Award (all April 2019, Pi Lambda Phi Fraternity Florida Delta Upsilon Chapter) · Order of Omega Inductee (October 2019, Florida Institute of Technology Office of Fraternity and Sorority Life)

Student Body Senator

2018 May – 2020 May

Student Government Association at Florida Institute of Technology

- Represented over 200 undergraduate students at Florida Institute of Technology during two consecutive terms.
- Notable Accomplishments: Led construction of new Student Body Constitution and Statutes system; Responded to crosswalk safety issues in Quality of Life committee and pushed for the implementation of methods that have decreased overall crosswalk-related accidents including flashing pedestrian crosswalk signs at the main roadway crosswalk going through the Florida Tech campus

Supervisor of Elections

2019 August – 2020 May

Student Government Association at Florida Institute of Technology

- Corresponded between Election Commission, Student Body, Student Government Association, and Office of Student Life to ensure fair and democratic processes for electing the next session of the Student Government Association
- Notable Accomplishments: Responded to the beginning of the COVID-19 Pandemic as the Student Body Election season was occurring and led the Elections Commission, Student Government, Student Life Office, and Student Body through the transition with appropriate changes, resulting in only a 35% reduction in student body participation at the time of the election amidst the first few months of the pandemic; Compiled and expanded resources including timelines and procedures available for future Supervisor of Elections; Oversaw implementation of new Election voting system via CampusLabs which included candidate biographies and photos attached to the ballots

President

2019 January – 2020 January

Rainbow Alliance at Florida Institute of Technology

- Led Florida Institute of Technology LGBTQ+ Student Organization in activism, education and development, university improvement, and general activities
- Notable Accomplishments: Led the planning, arrangement, and execution of first-ever Florida Tech Pride Week; Increased networking with other pride organizations and their leadership including Space Coast Pride and Florida Collegiate Pride Coalition; Led rebranding of Rainbow Alliance from previously named Spectrum; Collaborated with Space Coast Pride to allow Rainbow Alliance to walk in Space Coast Pride Parade; Collaborated with EA Games Pride group to walk with them in Orlando Come Out With Pride Parade; Developed first ongoing sponsorship for the organization; Established organizational Advisory council and filled three spots

Vice President

2018 September – 2019 January

Rainbow Alliance at Florida Institute of Technology

- Supported President as second-in-succession and attended meetings in their place

- Notable Accomplishments: Implemented transition documents for all Executive Board positions for successful and smooth transfer of power (4 documents); Led rewriting of Organization Constitution and Bylaws to better reflect actual procedures of the organization and to implement new systems and procedures

Treasurer

2018 January – 2018 September

Rainbow Alliance at Florida Institute of Technology

- Managed financial assets of the organization; Planned and executed general-purpose fundraisers; corresponded with and submitted funding requests to the Student Activities Funding Committee for events
- Notable Accomplishments: Acquired funding through Student Activities Funding Committee requests, fundraising, and donations for the Executive Board and other interested members to attend statewide LGBTQ+ leadership conferences (6 attendees)

Treasurer

2018 May – 2019 May

Phi Eta Sigma at Florida Institute of Technology

- Managed financial assets of the organization; Planned and executed general-purpose fundraisers
- Notable Accomplishments: Organized and budgeted ongoing membership incentive program

PERSONAL PROJECTS

BehaviorPy

- BehaviorPy is a Python library for the Behavioral Sciences.
- Project Repository: https://github.com/JacobChesslo/behaviorpy

marshmallow-jsonschema-2

- JSON Schema (Draft v7) formatting and serialization support for marshmallow schemas.
- Project Repository: https://github.com/JacobChesslo/marshmallow-jsonschema-2

UmbrellaSocial

- A simple social media web application built in Python.
- Project Repository: https://github.com/JacobChesslo/UmbrellaSocial

PROFESSIONAL AFFILIATIONS

- American Physical Society (APS)

PRESENTATIONS

- Molt, R., Patterson, E., Chesslo, J., Burns, D. (2021 Apr) IR peak position accuracy compared to experiment from VPT2 and VSCF anharmonic formalisms for gaseous and liquid systems. American Chemical Society Spring 2021 Conference. https://scimeetings.acs.org/exhibit/IR-peak-position-accuracy-compared/3553975, https://acs.digitellinc.com/p/s/ir-peak-position-accuracy-compared-to-experiment-from-vpt2-and-vscf-anharmonic-formalisms-for-gaseous-and-liquid-systems-27032
- Molt, R., Patterson, E., Chesslo, J., Burns, D. (2022 Mar) Accuracy of VPT2/CCSD(T) IR spectral estimation for broadened signals at STP conditions. American Chemical Society Spring 2022 Conference. https://acs.digitellinc.com/p/s/accuracy-of-vpt2ccsdt-ir-spectral-estimation-for-broadened-signals-at-stp-conditions-472531

POSTERS

- Bomberger, M., Chesslo, J., Pitts, N., Construction and test of a modular gas electron multiplier for a future electron-ion collider. M. BOMBERGER, J. CHESSLO, N. PITTS, A. WIKRAMANAYAKE, M. HOHLMANN. High Energy Physics Laboratory A, Department of Aerospace, Physics, and Space Sciences, Florida Tech, 150 W. University Blvd, Melbourne FL 32901. https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=5193&context=cps_facpresentations

- Chesslo, J., Rahmani, M., Hohlmann, M. (2020 Apr) Gridpack Automation for CMS MC Sample Requests. Florida Institute of Technology Student Design Showcase. Related report: Central CMS MC Requests: Overview (Independent Study, Spring 2021)
- Bomberger, M., Chesslo, J., Hohlmann, M. (2019 Apr) Construction and Test of a Modular GEM for EIC. Florida Institute of Technology Student Design Showcase

EXAM SCORES

- GRE: 324 / 340
  - Verbal Reasoning: 159 / 170 (82nd Percentile)
  - Quantitative Reasoning: 165 / 170 (85th Percentile)
  - Analytical Writing: 4.0 / 6.0 (54th Percentile)
- ACT: 33
  - English: 33
  - Math: 30
  - Reading: 32
  - Science: 34
- SAT (with Essay): 1400 / 1600
  - EBRW: 700 / 800
  - Math: 700 / 800
- Physics Subject Test: 690 / 800
- Chemistry Subject Test: 660 / 800
- Mathematics Subject Test: 680 / 800

SKILLS AND QUALIFICATIONS

Computer Science, Software Engineering, and Software Development

- Methodologies, Practices, and Technologies: Object-Oriented Programming (OOP), Object-Oriented Design (OOD), Test Driven Development (TDD), Domain-Driven Design (DDD), Representational State Transfer (ReST), Agile Software Development, ReST APIs, Continuous Integration (CI), Continuous Delivery (CD), Continuous Deployment (CD), DevOps, Full-Stack Development, Infrastructure as Code, Configuration as Code, Algorithms, Data Structures
- Programming Languages: Python (Python 2, Python 3, Python 3.6.5+), C (C99, C11, C17), C++ (C++03, C++11, C++14, C++17, C++20), Fortran (F90, F95, F 2003, F 2008, F 2018), JavaScript, TypeScript, Java, MATLAB, Julia, SQL, GraphQL, Bash, C Shell, Z Shell, Go, HTML, CSS
- JavaScript Frameworks and Libraries: React
- Python Libraries, Frameworks, and Distributions: NumPy, SciPy, Matplotlib, Plotly, Sympy, Requests, Beautiful Soup 4, Django, Flask, Marshmallow, Pydantic, SQLAlchemy, Pandas, Anaconda, F2Py, Unittest, Pytest, FastAPI, Celery, Qiskit, TensorFlow, scikit-learn, setuptools, setuptools_scm, Alembic, Gunicorn
- Database Systems: SQLite, MySQL, SQLPlus, PostgreSQL (10, 11, 12, 13, 14, 15), Oracle Database, MongoDB, Redis
- Build Tools: Make, CMake, Python setuptools, Anaconda, pip, Apache Maven
- Workload Systems: Slurm Workload Manager, Portable Batch System (PBS)
- Programming Tools, Technologies, and Protocols: Docker, Jira, Cygwin, MinGW, PuTTY, MobaXterm, vim, HTTP Protocols, WebSockets, Network and Communication Protocols (TCP/IP)
- Version Control: Git, GitHub, GitLab
- Cloud and Infrastructure: AWS (Lambda, S3, Route 53, EC2, Aurora, DynamoDB, RDS, CloudWatch, ECS, IAM, PCS), Kubernetes, Terraform, Ansible
- Observability and Monitoring: Datadog, OpenTelemetry, Prometheus, Grafana
- Operating Systems: POSIX (Unix, Linux), macOS, Windows

Standards and Compliance

- Aerospace Safety-Critical Software: DO-178 (Software), DO-254 (Hardware), DO-330 (Tool Qualification)
- Security and Risk Management: NIST 800-53, NIST 800-171
- Systems Engineering: NASA NPR 7123
- Quality and Cyber: AS9115
- Verification Environments: Hardware-in-the-Loop (HIL), Processor-in-the-Loop (PIL), Software-in-the-Loop (SIL)

Physical Sciences: Chemistry, and Physics

- Physics Topics: Many-Body Problems, Computational Physics and Methods (Monte Carlo), Statistical Mechanics, Quantum Physics, Quantum Information
- Chemistry Topics: Infrared Spectroscopy, Quantum Chemistry, Computational Chemistry, Electronic Structure Methods (Hartree-Fock Method, Self-Consistent Field Method, Density Functional Theory, Perturbation Theory, Coupled Cluster Theory)
- Scientific Software: MadGraph5, MadGraph5_aMC@NLO, PYTHIA (PYTHIA8), ROOT, GaussView, Gaussian, ACES3, ACES4, CFOUR, CrystalMaker, Hitran, NASA Trick
- Theory Development, Mathematical Modeling, Research, Data Analysis, Error Analysis

General Engineering

- Computer Aided Design (CAD) and Drafting: Autodesk Inventor, Autodesk Fusion 360
- Machining: 3D Printing, Waterjet Cutting, Laser Cutting, General Tooling

Soft Skills

- Office and Productivity Software and Packages: Atlassian Jira, Atlassian Confluence, Atlassian Trello, Microsoft Excel, Microsoft PowerPoint, Microsoft Word, Microsoft Outlook, Google Docs, Google Sheets, Google Slides, Apple Numbers, Apple Keynote, Apple Pages
- Organizational Leadership: Robert's Rules of Order, Team Development, Organizational Development, Goal Setting, Vision Setting, and Mission Setting
- Recruitment, Marketing, Training
- Scientific and Technical Communication