Khusanjon Bobokhojaev

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Motivated Computer Science and Physics student at California Lutheran University with strong foundations in data analysis, computational modeling (CAD/FEA), machine learning, and experimental physics. Currently contributing to particle physics research at CERN (LHC) and previously at Fermilab, applying advanced programming and data science techniques to real-world scientific problems.

Through coursework in differential equations, machine learning, electronics, optics, and thermodynamics, I've developed a versatile technical skill set spanning simulation, system design, and data-driven research. My interdisciplinary background is strengthened by practical experience in SolidWorks, Python, and circuit design.

Outside the lab, I bring leadership, resilience, and adaptability from diverse roles in consulting, teaching, and athletics. Driven by curiosity and impact, I aim to bridge scientific exploration with innovative computing solutions.

EXPERIENCE

CERN | FERMILAB | California Lutheran University - *Research Fellow*

May 2024 - PRESENT

- Data Analysis: Conduct comprehensive data analysis to identify and isolate signals indicative of supersymmetric particles.
- Algorithm Optimization: Improve and refine the filtering algorithm to enhance the ratio of SUSY events to background events in datasets.
- Data Transition: Facilitate the transfer of current datasets from MiniAOD to NanoAOD format to optimize data storage and processing efficiency.
- Collaborative Research: Work closely with fellow researcher, Carys Garvey, who will also work on machine learning optimization for particle identification and systematic error estimation in theoretical models for Supersymmetry.

Mathnasium - *Instructor*

July 2023 - PRESENT

- Tutor for kids from young to old, covering any math topic
- Help students build a fundamental understanding of math topics

SKILLS

- Technical Skills:
    - Programming (Java, JavaScript, Python, C++, HTML, CSS, SQL, MATLAB)
    - Storage Area Networks
    - Data Modeling
    - Information Technology Infrastructure
    - Data Processing and Analysis
    - Statistical Data Analysis
    - Database Management
    - CAD Modeling and Finite Element Analysis
    - Machine Learning/Neural Network Development
- Tools & Technologies
    - SolidWorks, MATLAB, Git/GitHub, Arduino, Linux, NanoAOD/MiniAOD (CMS), ROOT, Jupyter Notebooks (Colab), VSCode, Microsoft Office, SQL
    - Libraries & Frameworks:
        - Pandas, NumPy, Matplotlib, SciKit-Learn, PyTorch, SciPy, OpenCV, Pytorch
- Soft Skills:
    - Problem Solving, Team Collaboration, Leadership, Time Management, Critical Thinking, Business Planning, Adaptability, Work Ethic

EDUCATION

California Lutheran University - *BS Computer Science & Physics - Minor - Mathematics*

August 2023 - June 2027

- Research Fellow
- Member of CS Club
- Member of Physics Club
- Member of MMA Club

Sherman Oaks Center for Enriched Studies (SOCES) - *High School Diploma*

August 2019 - June 2023

- Top 9% in California
- 4.43 GPA
- 1470 SAT

PROJECTS/ACHIEVEMENTS

- Arduino Day-Date-Temp OLED Module
    - Real-time environmental and volume monitoring system
- Sherman Oaks Center for Enriched Studies
    - AP Research -
        - Investigated soil bacteria development for environmental health.
    - Academic Decathlon
        - 2023 LAUSD Regional Academic Decathlon winner
        - 2023 CA State Academic Decathlon Top 10 Team
        - 2023 US National Academic Decathlon Top 3 Team
    - Honor Roll
    - AP Honor
    - AP Scholar With Distinction

AWARDS

- ALLIES Summer Research Fellowship - California Lutheran University (2025)
    - Research stipend for 2025 Summer Undergraduate Research Program
- VITAL Grant - California Lutheran University (2024)
    - Grant given to pursue research over the summer pertaining to data analysis
- Certificate of Excellence - US House of Representatives - Sherman Oaks Center for Enriched Studes (2023)