Alfredo Canzani

PhD, MEng, MSc
Post-Doctoral Research Scientist of Yann LeCun's lab
canziani@nyu.edu
@AlfredoCanziani

My research:
I have been exploring deep policy networks actions uncertainty estimation and failure detection, and long term planning based on latent forward models, which nicely deal with the stochasticity and multimodality of the surrounding environment.

My expertise is:
Communicate abstract and complex concepts in simple terms with the aid of computer graphics.

A problem I'm grappling with:
The accessibility and democratisation of AI, often obscured by unnecessarily cryptic math.

I've got my eyes on:
Pretty things and the creation of aesthetically pleasing pedagogical and informative content.

I want to know more about:
3D animation of mathematical and physical drawings for educational purpose.

NYU | COURANT INSTITUTE OF MATHEMATICAL SCIENCES

Ian Cosden

Manager, HPC Software Engineering and Performance Tuning
Research Computing, OIT
Princeton University
icosden@princeton.edu

My research:
HPC software design, performance, and optimization.
Academic software/programming support.
Growing the nascent US-RSE community: https://us-rse.org

My expertise is:
HPC code optimization and performance tuning.
Parallel Programming.

A problem I'm grappling with:
How to establish a team of Research Software Engineers (RSE) that can contribute to cutting-edge academic researcher in an meaningful and impactful way.

I've got my eyes on:
Existing successful cross-disciplinary software collaborations.

I want to know more about:
What software challenges are others facing?
What opportunities exist for RSEs in the current and future research community.

PRINCETON UNIVERSITY

US RSE
US RESEARCH SOFTWARE ENGINEER COMMUNITY

Peter Elmer

Staff Researcher, Princeton University
CERN CMS Experiment Software & Computing R&D Co-Coordinator
Executive Director and Lead PI for the Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP)
Peter.Elmer@cern.ch

My research:
The CMS Experiment at CERN, as well as the R&D to prepare the software and computing systems required to operate and produce scientific results from the HL-LHC and other HEP experiments in the 2020s.

My expertise is:
High Energy Physics (HEP) software and computing, large software/computing projects

A problem I'm grappling with:
Recognizing echo chamber effects in our thinking and organizations, and finding ways to create more dynamic and sustainable research software collaborations to address our challenges.

I've got my eyes on:
HEP challenges in the 2020s...

I want to know more about:
Places where HEP problems overlap with the larger research community; ideas and prior experience which show how we might collaborate on those problems.

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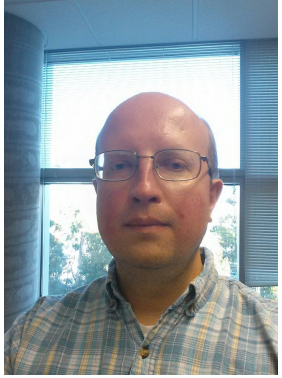
CERN

CMS Compact Muon Solenoid

dianahep

iris hep
Institute for Research & Innovation in Software for High Energy Physics



Slava Krutelyov

Research Scientist
Department of Physics UCSD
vyacheslav.krutelyov@cern.ch

My research:

- searches for new physics with disappearing tracks
- parallelization of KF tracking
- novel methods for tracking in HL-LHC. Understanding interplay between tracking software and tracker detector design.

My expertise is:
Software for collider events reconstruction at CMS and previously at CDF. Experimental HEP analyses with signatures in the standard model and beyond.

A problem I'm grappling with:

I want to know more about:

David Lange

Research Staff
Department of Physics
Princeton University
David.Lange@cern.ch

My research:
Software integration, analysis techniques, event reconstruction performance optimization, CMS experiment and DIANA project

My expertise is:
- Event generation, detector simulation, event reconstruction techniques in HEP

A problem I'm grappling with:
- Leveraging scientific python for HEP

I've got my eyes on:
- The vast, but unknown to expert application developers, resource usage of analysis applications in HEP (or at least CMS)

I want to know more about:
- Synergies of HEP techniques with academic+industry community developed tools and applications

CMS Compact Muon Solenoid

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Steve Lantz

Senior Research Associate
Cornell University Center for Advanced Computing
steve.lantz ~at~ cornell.edu

My research:
Computational research in applied physics, high performance computing

My expertise is:
HPC code optimization, parallel programming

A problem I'm grappling with:
How to introduce performance-oriented techniques into scientific codes without obscuring the science; how to get researchers to care about code quality and maintainability (software engineering)

I've got my eyes on:
Python, Jupyter, machine learning (so I'm a student here as well as a presenter)

I want to know more about:
Physics - as it seems I spend nearly all my time on technology (willingly enough - I enjoy both)

Cornell University
Center for Advanced Computing

David Luet

Linux System Administrator, Software and Programming Analyst
Dept. of Geosciences, Research Computing OIT, PICSciE.
Princeton University
luet@princeton.edu

My research:
Adapting modern software development techniques used in the IT industry to scientific software development in academia.

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My expertise is:
Modern software development techniques: Continuous Integration/Continuous Testing, Source Code Management, Collaborative Software development, Agile software development.

A problem I'm grappling with:
Convincing Researchers to change the way they develop scientific codes.

I've got my eyes on:
Julia: the ease of Matlab with the speed of compiled language. At least that's the promise.

I want to know more about:
Artificial Intelligence and Machine Learning especially in their applications to science and engineering.

Sudhir Malik

Professor of Physics: University of Puerto Rico Mayaguez

My research:
Experimental Particle Physics, related computing and software, education, outreach

My expertise is:
particle detectors, software

A problem I'm grappling with:
Know more about Machine Learning

I've got my eyes on:
Application of Machine Learning in high luminosity tracking at the HL-LHC and Data Quality Monitoring of Silicon Tracker

I want to know more about:
Parallel Programming

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UNIVERSIDAD DE PUERTO RICO
CAAM

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CMS
Compact Muon Solenoid

Tim Mattson

Intel labs Senior Principal Engineer and PI of Intel's Science and Technology center at MIT

My research:
Parallel programming … both programming languages and parallel design patterns.

Array storage engines, polystore DBMS, and Graph Algorithms (the GraphBLAS).

AI to generate software and to replace key algorithms in data systems (my MIT collaboration)

My expertise is:
All things "parallel computing"; from programming languages and hardware to parallel design patterns. I helped create both OpenMP and OpenCL.

Oh, and kayaking … I am kayak-surf bum and a professional kayak coach.

A problem I'm grappling with:
Use abstract algebra to unify key-value, SQL, and array query notations and then wrap them around graphs in the language of linear algebra

I've got my eyes on:
Modern C++ as a language for end-user communities to define their own Domain specific languages.

I want to know more about:
Physics is my passion. Computer Science is boring … It's just a tool to help us understand physics.

intel

Data Systems for AI AI for Data Systems

OOPS Oregon Ocean Paddling Society

Jim Pivarski

IRIS-HEP team member at Fermilab's LPC
Princeton University
pivarski@princeton.edu

My research:

- Software tools for end-user physicists
- Interface between HEP software and Big Data/Machine Learning software from industry

My expertise is:
Physics analysis, Big Data ecosystem, parallelization techniques, programming language design.

A problem I'm grappling with:
Developing columnar analysis tools for physics, such as awkward-array and uproot.

I've got my eyes on:
The varied ways physicists work; determining what coding styles seem natural to physicists.

I want to know more about:
High performance computing.

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diana hep

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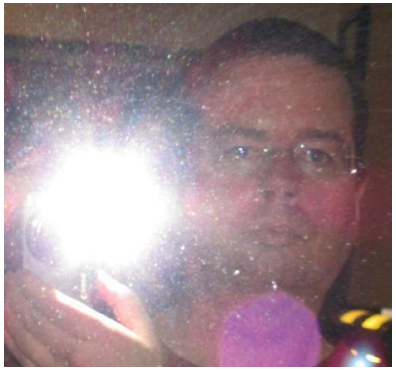
CMS
Compact Muon Solenoid



Dan Riley

Research Associate, Cornell University

My research:
Multi-threaded frameworks
Parallelization and vectorization of HEP event reconstruction software (currently mostly tracking)
High-availability clusters for experiment control and data acquisition

My expertise is:
C++, threading, reliable communication protocols

A problem I'm grappling with:
Identifying the bottlenecks in complex vector/parallel code

I've got my eyes on:
How will consumer "AI" applications like self-driving cars change the hardware landscape?

I want to know more about:
Machine learning, quantum computing

Oksana Shadura

DIANA-HEP team member at University of Nebraska-Lincoln
oksana.shadura@cern.ch

My research:
I/O and compression algorithms
Performance optimisation and profiling
Build systems

My expertise is:
I/O and compression algorithms, performance analysis, continuous benchmarking, build systems, adoption of C++ modules in software frameworks.

A problem I'm grappling with:
ROOT I/O improvements.

I've got my eyes on:
new generation of analysis tools (columnar analysis tools).

I want to know more about:
high performance computing & machine learning in HEP.

University of Nebraska Lincoln

diana hep

ROOT Data Analysis Framework

Henry Schreiner

IRIS-HEP team member at Princeton University
henryfs@princeton.edu

My research:

- Teaching CMake, Python, and other tools
- CNNs for Primary Vertex Reconstruction
- Python bindings for Boost::Histogram
- Conda-Forge package for ROOT
- GPUs for fitting problems
- Python tools for analysis

My expertise is:
Build systems for C++ and Python, software in HEP analysis, automation, real-time analysis, GPUs & parallel programming, CLI interfaces.

A problem I'm grappling with:
Separating a toy model and a neural network for use with different data sources and experiments.

I've got my eyes on:
Numba and high-performance Python, JupyterLab, C++ advancements.

I want to know more about:
Providing sustainable teaching materials for HEP computing.

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Scikit HEP

diana hep

iris hep
Institute for Research & Innovation in Software for High Energy Physics

Savannah Thais

Post-doctoral researcher for IRIS-HEP at Princeton
savannah.thais@gmail.com

My research:
ML for particle identification online and offline, trigger optimization, and improved analysis design.

My expertise is:
HEP software and its overlap with ML, particularly focused on offline particle ID

A problem I'm grappling with:
How to strengthen collaborations and information exchange between scientists and ML researchers (in academia and industry)

I've got my eyes on:
The work OpenAI, AINow, and other groups are doing to ensure equitable and transparent public sector use of ML and AI

I want to know more about:
Parallel computing and ML hardware implementations

PRINCETON UNIVERSITY

iris hep
Institute for Research & Innovation in Software for High Energy Physics

Vassil Vassilev

PhD in Computing. Consultant at Princeton. ISOCPP member. Author of Cling. Tech evangelist. ***vvasilev@cern.ch***

My research:

- Automatic Differentiation;
- Compilers & Interpreters;
- Open, interactive and dynamic visual programming languages;
- Programming language design and implementation and software optimization.

My expertise is:
C++, Cling, LLVM, Clang, ROOT

A problem I'm grappling with:
Design and implement first class C++ Modules support in ROOT. Advance clad support of hessians.

I've got my eyes on:
Building the next generation I/O library based on C++ Modules and Cling supporting declarative programming languages.

I want to know more about:
Tensorflow and Swift

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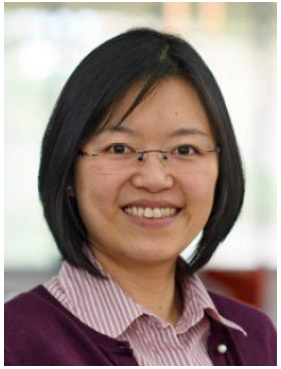
Institute for Research & Innovation in Software for High Energy Physics

ROOT
Data Analysis Framework



Bei Wang

Ph.D. in computational science and engineering
HPC Software Engineer for IRIS-HEP
Research Computing/OIT at Princeton University
beiwang@princeton.edu

My research:

- High performance computing
- High order particle-in-cell methods for kinetic equations

My expertise is:
Code development and optimization on modern computing architectures, such as GPU and Intel Xeon processors. Parallel programming models, MPI, OpenMP etc

A problem I'm grappling with:
Start learning tracking algorithms and their parallel implementations in HL-LHC

I've got my eyes on:
Interdisciplinary research software collaborations

I want to know more about:
High performance python, machine learning

PRINCETON UNIVERSITY

Ma. Florevel (Floe) Fusin-Wischusen

Institute Manager

Princeton Institute for Computational Science & Engineering (PICSciE)
Princeton University
335 Peter B. Lewis Library
Office: (609) 258-8071 / Mobile: (267) 733-3425
floe@princeton.edu
www.princeton.edu/researchcomputing

PRINCETON UNIVERSITY

Maureen Carothers

Finance and Grants Administrator, Princeton Institute for Computational Science and Engineering (PICSciE)

Project Office, Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP)

mcc3@princeton.edu / 609-258-2023

PRINCETON UNIVERSITY

Andrea Rubinstein

Administrative Staff, Princeton Institute for Computational Science and Engineering (PICSciE)

alrubins@princeton.edu / (609) 258-1397

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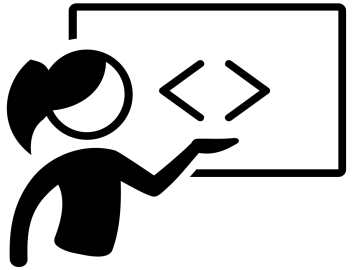

Shekhar Adhikari

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My research:
<Replace this text with your information. Replace the images at the bottom with your favourite tool logos (or anything you like!). You can add more, or delete them.>

My expertise is:
<All text can be replaced, but for consistency we recommend the headings remain.>

A problem I’m grappling with:
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I’ve got my eyes on:
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I want to know more about:
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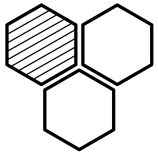

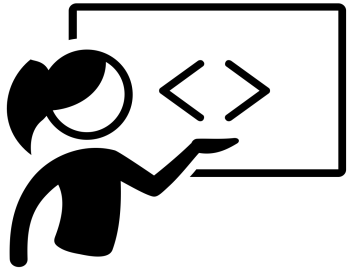

Ayman Ahmad Al-bataineh

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I want to know more about:
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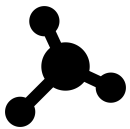
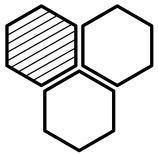




Rui An

PhD candidate, Illinois Institute of Technology

My research:

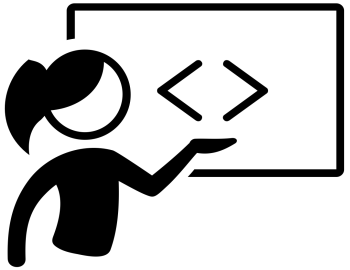
- Apply deep learning tools of CNN, MaskRCNN to MicroBooNE (LArTPC in general).
- Low energy excess observed by MiniBooNE.

My expertise is:
CNN, Mask RCNN for LArTPC.

A problem I’m grappling with:
Object detection/segmentation for concatenated particles.

I’ve got my eyes on:
Improve Mask RCNN for LArTPC.

I want to know more about:
More about machine learning.



Justin Anguiano

Graduate student University of Kansas
j342a201@ku.edu

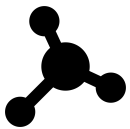
My research:
Electroweak SUSY search with compressed scenarios,
Electroweak precision measurement at ILD

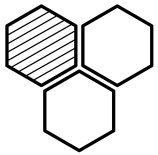
My expertise is:
HEP Data Analysis

A problem I'm grappling with:
Trying to build scalable analysis to work in very large datasets

I've got my eyes on:
NN, Scientific Python

I want to know more about:
NN, Scientific Python





Austin Baty

Postdoctoral researcher, Rice University
abaty@rice.edu

My research:

- Study heavy ion collisions with CMS
- Interested in high-density QCD studies in archived data (LEP, HERA, etc.)
- Trying to improve Heavy Ion reconstruction with machine learning

My expertise is:

- Tracking in high-density (HI) collisions
- Data analysis tools for HI

A problem I'm grappling with:

- Trying to develop techniques for using neural network classification in heavy ions

I've got my eyes on:

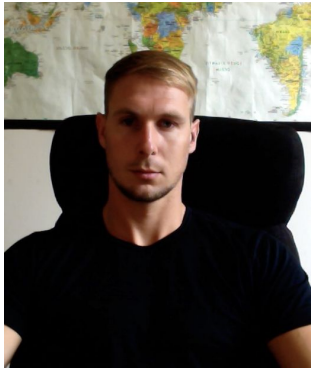
- New machine learning implementations
  - E.g. Energy Flow Networks

I want to know more about:

- Parallel/GPU-assisted tracking for high-density collisions

RICE

CMS Compact Muon Solenoid



Jason Bono

Postdoc, Fermilab
jbono@fnal.gov

My research:
Precision muon physics

My expertise is:
Data analysis
Hardware
Mathematical modeling

A problem I'm grappling with:
Frequency extraction of NMR signals

I've got my eyes on:
Using machine learning to improve signal processing

I want to know more about:
Machine learning algorithms with continuous output for time series data

Fermilab

Mu2e

g–2

Emma Castiglia

Graduate Student, Yale University
emma.castiglia@yale.edu

My research:

- ATLAS VH, H->tautau Run 2 Analysis
- Tau Energy Scale Calibration

My expertise is:
HEP data analysis in python and ROOT
BDT and BRT for triggers and signal separation for ATLAS and Mu2e (former work)

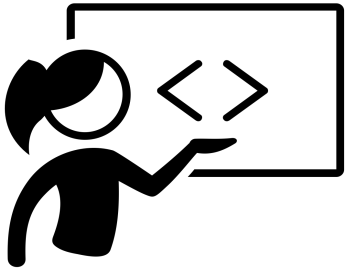
A problem I'm grappling with:
Finding the best format to store and analyze our data in a quick and memory efficient manner

I've got my eyes on:
Applying ML algorithms to our analysis - optimizing our selection cuts for sig/bkg separation

I want to know more about:
Reproducibility and Interpretability of ML Algorithms
Parallel Programming

Yale

ATLAS EXPERIMENT



Kate Ciampa

Ph.D. Candidate, University of Minnesota
ciamp009@umn.edu

My research:

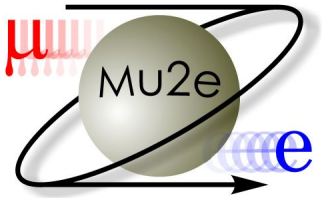
- Search for charged lepton flavor violation via neutrinoless muon to electron conversion with the Mu2e experiment
- Mu2e tracker prototyping (past), construction (current), and data analysis (just starting)

My expertise is:
Detector instrumentation for the electron tracker in the Mu2e experiment; python

A problem I'm grappling with:
Learning conventional track finding methods and machine learning image classification/segmentation methods

I've got my eyes on:
Applying a deep convolutional neural network to the problem of finding tracks and classifying particles from images of hits in the Mu2e tracker

I want to know more about:
Parallel computing; recent breakthrough neural network architectures



UNIVERSITY OF MINNESOTA

Steven Clark

Graduate Student in Physics at Rutgers University

My research:
Searches for new particles at the CMS detector at CERN. Searching for resonances decaying to 3 and 4 photons using Machine Learning techniques

My expertise is:
Data Analysis in Python and ROOT

A problem I'm grappling with:
Developing techniques to detect highly merged photons

I've got my eyes on:
Machine Learning for particle physics

I want to know more about:
General Machine Learning, Parallel Computing

Leonardo Cristella

Post-doctoral researcher for the CERN CMS experiment at University of Bari
leonardo.cristella@cern.ch

My research:

- Searches for exotic particles at the CMS detector at CERN
- R&D of the software and computing systems for remote CMS data analysis

My expertise is:
HEP data analysis in Python, ROOT, CUDA.
Parallel programming and distributed computing.

A problem I'm grappling with:
Signal/background classification with ML techniques.

I've got my eyes on:
FPGA, GO, cross-disciplinary software collaborations.

I want to know more about:
General Machine Learning, software-hardware relevant relation for parallel computing

CRAB
Cms Remote Analysis Builder

Pratyush (Reik) Das

IRIS-HEP Fellow at Fermilab's LPC
Undergraduate at Institute of Engineering & Management, Kolkata

reikdas@gmail.com

My research:
Reimplementing ROOT I/O in pure python.

My expertise is:
Software development for High Energy Physics.

A problem I'm grappling with:
Modularity of data analysis tools, reproducibility of computation.

I've got my eyes on:
Transition of programming style in scientific analysis, programming language design for scientific computing.

I want to know more about:
Programming language theory, reinforcement learning, high performance computing.

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IEM
श्रद्धावान लभते ज्ञानम्
INSTITUTE OF ENGINEERING & MANAGEMENT
Good Education, Good Jobs

Scikit HEP

uproot

Andrea Delgado

Graduate Student, Texas A&M University
delgado_andrea@tamu.edu

My research:
HEP: Heavy gauge boson resonance searches in all-hadronic final states.
QC: Quantum adiabatic memory recall for pattern matching in HEP.

My expertise is:
HEP analysis, Jet energy corrections

A problem I'm grappling with:
Private MC production for my physics analysis

I've got my eyes on:
Quantum computing in high energy physics

I want to know more about:
Machine learning, software developing tools for HEP, AI in general

Hongyue Duyang

Postdoc, University of South Carolina

hyduyang@gmail.com

My research:
Neutrino oscillation experiments;
Neutrino cross-section measurements;
Designing the next generation detector for future neutrino experiments.

My expertise is:
Data analysis for neutrino experiments.

A problem I'm grappling with:
Model dependence in neutrino data analysis.
Also no money to build my detector! (ok irrelevant)

I've got my eyes on:
Usage of machine learning for neutrino reconstruction and data analysis.

I want to know more about:
Everything about machine learning.

Michael Eggleston

PhD Candidate, Duke University (2020 expected)

michael.eggleston@cern.ch

My research:
Searching for Vector-Like Quarks with data collected by the ATLAS experiment.

My expertise is:
ATLAS simulation, data analysis in C++ and python

A problem I'm grappling with:
Implementing modern software and design in analysis frameworks

I've got my eyes on:
How to bring the frontier of scientific/computing research to solve industrial problems

I want to know more about:
Use of machine Learning and big data outside of CERN

Duke UNIVERSITY

ATLAS EXPERIMENT

Lucas Flores

PhD candidate, The University of Pennsylvania

lucas.flores@cern.ch

My research:
Searching for trilepton resonances in a minimal SUSY B-L R parity Violating Model.

My expertise is:
Electron ID, data analysis (python and C++)

A problem I'm grappling with:
Analysis preservation with container images

I've got my eyes on:
Reading this Deep Learning book

I want to know more about:
Machine learning and parallel computing

Penn
University of Pennsylvania

ATLAS
EXPERIMENT

Andre Frankenthal

PhD Candidate in Physics, Cornell University
Member of CMS and PADME collaborations
as2872@cornell.edu

My research:
I search for dark matter with collider (CMS) and fixed-target (PADME) experiments. I also work on upgrade studies and do R&D work for the HL-LHC.

My expertise is:
Reconstruction software and hardware development, MC simulations

A problem I'm grappling with:
Doing template fitting on a noisy sample of pulses

I've got my eyes on:
Machine learning and how to use it to improve current way of doing HEP things

I want to know more about:
ML, big data scaling out techniques, true parallel processing, GPU programming

Cornell Laboratory for Accelerator-based Sciences and Education (CLASSE)

Sudeshna Ganguly

Postdoctoral research associate from University of Illinois at Urbana-Champaign working on Muon g-2 experiment at Fermilab

My research:

Measurement of muon anomalous magnetic moment provides a stringent test of the Standard Model and can suggest physics beyond SM. The Muon g-2 experiment at fermilab aims to measure muon magnetic anomaly to a ground-breaking precision of 140 parts per billion. Currently I am leading an analysis effort to understand the uncertainty in measurement of muon precision frequency due to muons falling out of the beamline, known as “lost muons” prior to decay.

My expertise is:

HEP data analysis, DAQ,Online data quality monitor, Monte carlo simulation using C++, ROOT.

A problem I’m grappling with:

Creating large simulation sample without wasting too much CPU time to get a better understanding of the storage ring physics.

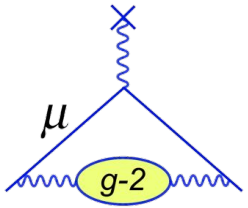
I’ve got my eyes on:

Machine learning and GPU parallel programming.

I want to know more about:

Machine Learning and everything else as well.

PHYSICS ILLINOIS



Ali Garabaglu

Undergraduate Student in Physics at Rutgers University
agarabag@cern.ch

My research:
I have worked on a search for the clockwork model in diphoton final states and a search for hadronic RPV stop quarks decaying to 5 quarks. Currently I'm helping out with simulation in the MATHUSLA project and thinking about future analysis.

My expertise is:
Data analysis in C++ and Python. And some jet physics.

A problem I'm grappling with:
Ways to use graphical models in high energy physics (like studying properties of jets).

I've got my eyes on:
Bayesian networks, and Julia the programming language.

I want to know more about:
Everything.

Guanqun Ge

Graduate student in Physics Department, Columbia University
Email: gg2690@columbia.edu

My research:

- Investigate the ability of SBN program in light sterile neutrino oscillation search
- Supernova burst trigger study for DUNE
- Production test for SBND

My expertise is:
Data analysis in C++

A problem I'm grappling with:
Implement feldman-cousins method for all grid points in parameter space to get sensitivity curve for light sterile neutrino oscillation.

I've got my eyes on:
Deep learning

I want to know more about:
Parallel Programming

Hugo Becerril Gonzalez

PhD candidate in Physics. University of Illinois at Chicago
hbecer2@uic.edu

My research:
Search for high-mass resonances decaying to ttbar in the CMS experiment

My expertise is:
HEP data analysis in C++ and Python

A problem I'm grappling with:
Implementing ML techniques to monitor the quality of tracking reconstruction

I've got my eyes on:
Machine Learning and Big Data Tools

I want to know more about:
GPU Parallel programming and Machine Learning

Cesar Gonzalez Renteria

Graduate Student Researcher at Lawrence Berkeley National Laboratory and graduate student at UC Berkeley

My research:
Verification of the design of the Pixel readout ASIC for the ATLAS and CMS collaborations at the LHC in CERN. Also currently working on setting up the analysis framework of a measurement using charm tagged jets.

My (very limited) expertise is:
Verification Engineering using a combination of SystemVerilog and UVM of IC designs.

A problem I'm grappling with:
How parallel computing and Machine Learning can be used to greatly increase the efficiency of charm tagging.

I've got my eyes on:
How the interface of computer science, computer engineering, electrical engineering and physics come together to get the most out of data.

I want to know more about:
Machine Learning and Parallel Programming

Lauren Hay

PhD Candidate, University at Buffalo
(Expected 2022)
CMS Experiment

My research:
Applying deep learning to jet classification ANN's. PF simulation in the forward region for CMS Phase 2 tracker linking to HF.

University at Buffalo
The State University of New York

My expertise is:
Building ANN's and performing simulation for detector upgrades.

A problem I'm grappling with:
Interpreting and visualizing LRP relevance scores; getting a better understanding of Particle Flow.

I've got my eyes on:
Deep Learning in all its forms, utilization of SIMD.

I want to know more about:
Parallel computing, tracking algorithms.

James Heinlein

PhD Candidate at University of Pennsylvania
Expected Graduation: 2023

My research:
I work on ATLAS searching for B-L R-Parity Violating SUSY decays. I also work on verification and testing of HCCStar chips for ITk

My expertise is:
Data Analysis using or C++ or Python.

A problem I'm grappling with:
Learning modern computational approaches and algorithms for efficient data analysis

I've got my eyes on:
Ways that parallel computing could improve my work efficiency and computational time. How can ML improve my analysis

I want to know more about:
Parallel computing. Machine Learning

Penn Physics & Astronomy

ATLAS EXPERIMENT

Pradeep Jasal

Visiting Scientist , Fermilab , CMS Experiment
Email : pradeep.jasal@cern.ch

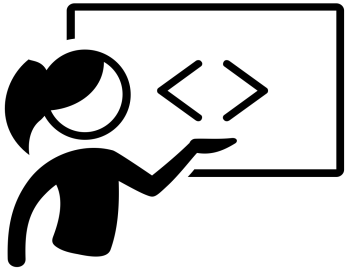
My research:
Data Management in CMS experiment

My expertise is:
Data Management in CMS experiment using PhEDEx (Physics Experiment Data Export) tool and data analysis using Python

A problem I'm grappling with:
Moving the data management operations to recently adopted scientific data management tool called Rucio

I've got my eyes on:
Using large scale data analysis and ML tools to in data management (monitoring metrics implementation, replication)

I want to know more about:
Big data tools , Real time machine learning inferencing with edge computing devices using AI accelerator ASIC's from google(Edge TPU) , intel etc. in High Energy Physics



Yeon-jae Jwa

<Your title and contact details go here.
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My research:
<Replace this text with your information. Replace the images at the bottom with your favourite tool logos (or anything you like!). You can add more, or delete them.>

My expertise is:
<All text can be replaced, but for consistency we recommend the headings remain.>

A problem I’m grappling with:
<All text can be replaced, but for consistency we recommend the headings remain.>

I’ve got my eyes on:
<All text can be replaced, but for consistency we recommend the headings remain.>

I want to know more about:
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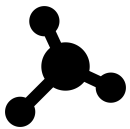
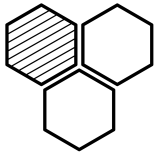
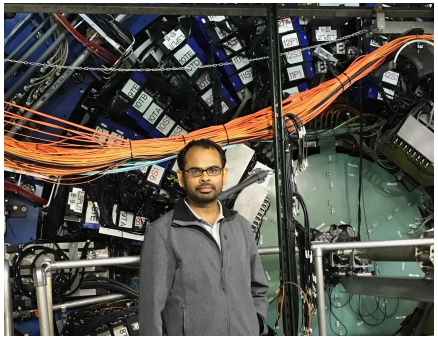






Latiful (Latif) Kabir

Post-Doctoral Scholar, UC Riverside (Stationed at BNL)
kabir@bnl.gov,
Web: jlab.org/~latif

My research:
Working on the STAR experiment at the RHIC and the future Electron Ion Collider. My research focus is the nucleon structure, hadron spectroscopy, and the underlying symmetry.

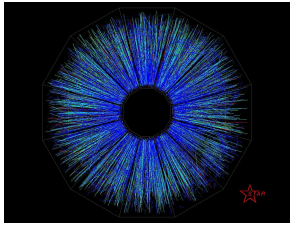
My expertise is:
OOP in C++/Java/Python, algorithm, data structure, multithreading, grid computing, data quality and development of scientific software.

A problem I'm grappling with:
Perfect data/track reconstruction from malfunctioning detectors.

I've got my eyes on:
Machine Learning, High Performance Computing, GPU and their applications in physical problems.

I want to know more about:
Tools and techniques from Data Science and other communities.

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE



BROOKHAVEN
NATIONAL LABORATORY

Cole Kampa

Graduate Student at Northwestern University

colekampa2024@u.northwestern.edu

My research:

- Modeling the Detector Solenoid magnetic field for the Mu2e experiment
- Study of the μ^- to e^+ conversion process (CLFV, LNV)

My expertise is:
Data analysis in Python, GPU parallelization

A problem I'm grappling with:
Learning modern computing techniques while also focusing on physics

I've got my eyes on:
Visualization techniques and tools to clearly communicate information at varying levels (e.g. Plotly Dash)

I want to know more about:
Machine Learning, Big Data

Manolis Kargiantoulakis

Fermilab Research Associate, PPD/MD g-2 and Mu2e

My research:
Tests of the Standard Model with muon precision physics, with the Muon g-2 and Mu2e experiments at Fermilab.

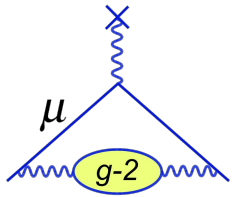
My expertise is:
HEP data analysis and simulation, using C++ and python.

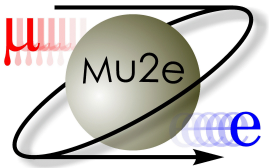
A problem I'm grappling with:
Fitting beam element field data in 3D toroidal coordinates; building MC phenomenological model of experimental observable.

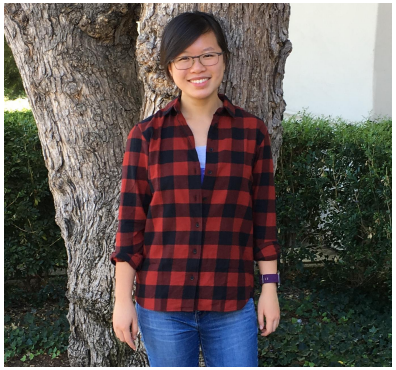
I've got my eyes on:
Programming tools to extract information from noisy samples and other scientific analysis challenges.

I want to know more about:
Machine learning, HPC

Fermilab







Stephanie Kwan

2nd Year Graduate Student in Physics
Princeton University
skwan@princeton.edu

My research:
I am developing hardware (FPGA) implementations of machine learning algorithms for identifying particles at the CMS Level 1 Trigger.

My expertise is:
Particle identification; some low-level programming

A problem I'm grappling with:
Quantifying ML algorithm performance; learning Vivado High-Level Synthesis

I've got my eyes on:
Learning how to identify and carry out detector upgrades in order to enable/ enhance searches for new particles & precision measurements.

I want to know more about:
The intersection of machine learning and high-performance hardware.

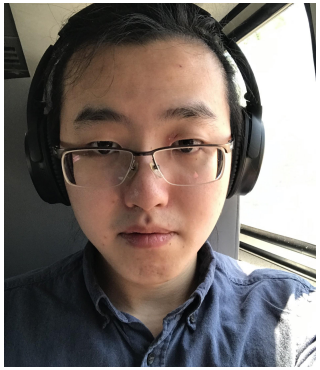
PRINCETON UNIVERSITY

CMS

NSF

GRFP
NSF GRADUATE RESEARCH FELLOWSHIP PROGRAM

Princeton
Women In Physics



Sicong Lu

1st year Ph.D.
University of Pennsylvania
ATLAS
siconglu@sas.upenn.edu

My research:
Characterization of AMAC performance in ATLAS ITk strips.
SUSY search.

My expertise is:
Analysis basics in ROOT (Python, C++);
Basic knowledge about TMVA, Keras.

A problem I'm grappling with:
Understanding the performance, optimization, and limit of computation.

I've got my eyes on:
Systematic understanding of the analyses and relevant theories.

I want to know more about:
Anything relevant to the above mentioned.

Penn
University of Pennsylvania

ATLAS
EXPERIMENT

Sara Nabili

Graduate Student in Physics, Maryland University
snabili@umd.edu

My research:
Study on CMS Level one trigger MET using HCAL EndCap depth segmentation

My expertise is:
HEP Data analysis in Python, C++ and ROOT CMSSW package

A problem I'm grappling with:
Finding the an algorithm to optimize L1 online trigger

I've got my eyes on:
Applying ML algorithms to our analysis

I want to know more about:
Learning Interaction network for hidden sector models.

Panchali Nag

PhD Candidate in (Applied) Mathematics, Duke University

M.Sc. (Theoretical) Physics

pn58@duke.edu

My research:
Applications of harmonic maps and integrable systems to surface theory and machine learning

My current expertise/interest is:
Applying geometry and representation theory to shape analysis, manifold learning and manifold reconstruction (from noise)

Data Analysis in Python

A problem I'm grappling with:
Develop a variational theory for shape learning

I've got my eyes on:
The interplay of machine learning and scientific computing in investigating "new physics" from large datasets

I want to know more about:
High Performance Computing

Duke
UNIVERSITY

Gregory (Greg) Ottino

Ph.D. Student at LBNL/UC Berkeley
gregory_ottino@berkeley.edu

My research:
Characterization of system level effects of radiation for the ATLAS ITK Strips Powerboard.
Improving charm jet tagging in ATLAS with a future focus on Higgs to charm decay and Higgs + charm associated production

My expertise is:
Irradiation of IC's and data analysis with ROOT/ C++

A problem I'm grappling with:
How to integrate various methods for charm jet tagging into a single algorithm to maximize purity and yield

I've got my eyes on:
Parallelization in the context of track reconstruction. ML improvements to heavy flavor tagging

I want to know more about:
Incorporating modern software tools into HEP research, w/ an emphasis on ML and Parallelization

Christos Papageorgakis

Physics Graduate Student
University of Maryland, College Park
CMS Experiment
cpapag@umd.edu

My research:
Radiation damage in plastic scintillators.
Simulations of HGCal using CMSSW and standalone code.

My expertise is:
C++, compilers

A problem I'm grappling with:
Applying multivariate regression correctly to mitigate for dead Si cells in HGCal.

I've got my eyes on:
ML techniques, optimization, parallelization.

I want to know more about:
Applying ML more effectively. HPC.

Mason Proffitt

PhD student at the University of Washington
masonlp@uw.edu

My research:
ATLAS long-lived particle search via displaced jets in the hadronic calorimeter; MATHUSLA (LHC surface level long-lived particle experiment); functional/declarative analysis languages as part of IRIS-HEP

My expertise is:
*nix operating systems, low-level programming (C/C++), ROOT, data analysis

A problem I'm grappling with:
Buggy, inconsistent, or unimplemented features in Scikit-HEP Python packages

I've got my eyes on:
Implementing a BDT or NN to help discriminate events with one displaced vertex and one LLP decaying promptly from background

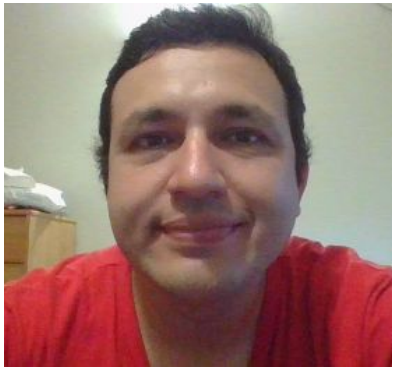
I want to know more about:
ML tools

UNIVERSITY of WASHINGTON

ATLAS EXPERIMENT

MATHUSLA

iris hep



Andres Quintero

Master in Electronics
aquinter@fnal.gov

My research:
I work at CMS for Tier 0 operation, so I am in charge of creating new software to improve data acquisition from CMS detector.

My expertise is:
Prototyping, 3d printing, FPGA, Data handling, Big data.

A problem I'm grappling with:
Extracting the configuration file from a previous run and recreate its harvesting job.

I've got my eyes on:
Kubernetes integration with Rucio for file transfer.

I want to know more about:
Machine learning applied to physics, specifically on how to replace tons of servers with some FPGAs.

CMS

Fermilab

Aleena Rafique

Postdoctoral Research Associate, Argonne National Laboratory

aleena@anl.gov / (785-317-6462)

My research:
Working on Michel electron search in ProtoDUNE experiment at CERN, Switzerland. I am also working on combining the charge (from Time Projection chamber) and light (from Photon Detector) information in liquid argon detectors.

My expertise is:
Data analysis, data handling, data quality monitoring

A problem I'm grappling with:
How to combine information from two separate detector subsystems (TPC and PD).

I've got my eyes on:
The challenges of neutrino physics

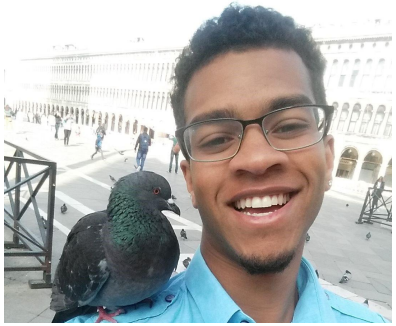
I want to know more about:
Machine learning

Argonne NATIONAL LABORATORY

DUNE DEEP UNDERGROUND NEUTRINO EXPERIMENT

CERN

ROOT Data Analysis Framework



Michael (Tres) Reid

Physics Ph.D. Student
Cornell University
CMS Experiment Collaborator
mgr85@cornell.edu

My research:
CMS experiment at CERN. I work on software upgrades for the CMS tracker and dark matter searches at CMS.

My expertise is:
Data analysis in Python, C++ and ROOT.

A problem I'm grappling with:
Parallelization and vectorization of the CMS track reconstruction algorithms.

I've got my eyes on:
GPU programming and parallel computing

I want to know more about:
Computer architectures, parallel computing, Machine learning and data mining.

Cornell Laboratory for Accelerator-based Sciences and Education (CLASSE)

Titas Roy

Postdoctoral Research Associate,
University of Illinois at Chicago
titasroy@uic.edu

My research:

Searching for top quark pair resonances using data collected by the CMS detector. I also work on the upgrade of the innermost part of our detector- the inner pixel tracker.

My expertise is:
Data analysis using C++, Python, PyROOT. Working with hardware and developing software to analyse data from readout electronics.

A problem I'm grappling with:
Making my code more efficient.

I've got my eyes on:
Using DNN in my new projects

I want to know more about:
Machine Learning and ANN.

Claire Savard

Physics Ph.D. Student
University of Colorado, Boulder
CMS Experiment Collaborator
claire.savard@colorado.edu

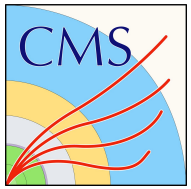
My research:
Applying machine learning to L1 trigger updates in the CMS detector. Currently working on particle identification.

My expertise is:
Research and design and algorithm development for detector upgrades.

A problem I'm grappling with:
Implementing algorithms on FPGAs.

I've got my eyes on:
Really immersing myself in the ML world so that I can bring back what I've learned to HEP-Ex.

I want to know more about:
Data mining, high performance computing, computing structures, parallel computing



Xiaobing Shi

Graduate Student in Physics
Purdue University
Mu2e experiment
shi304@purdue.edu

My research:
1. Mu2e Extinction Monitor pixel readout and Processing

2. Mu2e track reconstruction

My expertise is:
Data analysis in C++, Python

A problem I'm grappling with:
Fast track reconstruction code for the Extinction Monitor in Mu2e

I've got my eyes on:
Potential machine learning application in HEP experiment.

I want to know more about:
Parallel programming and machine learning

PURDUE UNIVERSITY

Fermilab

Mu2e

Matthew Snyder

Matt Snyder
Brookhaven National Lab, Senior Data Analyst
msnyder@bnl.gov

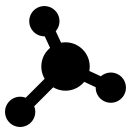
My research:
Implementing Rucio data catalog with Globus Online transfer tool.

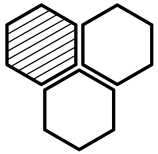
My (in)expertise is:
Data analysis, data movement and data modeling

A problem I'm grappling with:
ROOT.

I've got my eyes on:
Implementing travis on couple projects

I want to know more about:
New to HEP. Here to listen, learn and do.





Stefano Roberto Soleti

Postdoctoral Fellow
Harvard University
MicroBooNE experiment

My research:
I currently work on the MicroBooNE experiment, a short-baseline neutrino detector whose main physics goal is to study MiniBooNE's low-energy excess of electron-like events, which could hint to the presence of a sterile neutrino.

My expertise is:
Neutrino physics, isolation of small signals, algorithms for background rejection.

A problem I'm grappling with:
Optimization and combination of boosted decision tree for significance enhancement.

I've got my eyes on:
Numba, Machine Learning, parallel programming

I want to know more about:
Scientific python, parallelized data analysis with uproot.

HARVARD UNIVERSITY

μBooNE

Andre Stahl

Postdoctoral researcher,
Rice University
andre.stahl@cern.ch

My research:

- Analyze heavy-ion collisions at the LHC with CMS
- Study heavy-flavour hadrons and electroweak bosons in high-density QCD environments

My expertise is:

- Data analysis tools based on ROOT
- Muon tracking in heavy-ion data

A problem I'm grappling with:
Parallelizing data analysis tasks

I've got my eyes on:
Machine learning for data analysis and particle identification

I want to know more about:
Parallel programming and machine learning

RICE

CMS

CERN

Mehreen Sultana

Graduate Student in Physics
University of Rochester
sultana@fnal.gov

My research:
Searching for unmodeled multi-nucleon processes in the inclusive low recoil analysis in the MINERvA experiment

My expertise is:
ROOT, C++, some python
MS Powerpoint (joke)

A problem I'm grappling with:
Efficiently mapping multiple clusters to a single point (grouping pion candidate clusters to a michel candidate position in the detector)

I've got my eyes on:
Particle Identification, Machine learning, more data analysis via python

I want to know more about:
Parallel programming, machine learning

UNIVERSITY of ROCHESTER

Zachary (Zach) Warner

Graduate Student in Physics: University of Kansas
warner.zachary@ku.edu

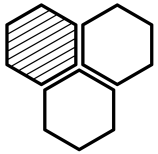
My research:
CMS experiment at CERN. Specifically I am looking at jet signatures for comparison with QCD model predictions.

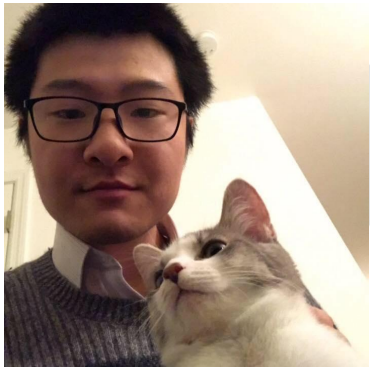
My expertise is:
Data analysis with CMSSW and Root.

A problem I'm grappling with:
Hadronic jet reconstruction and analysis for jets characterized by dijets with large rapidity separation and decorrelation in azimuthal angle.

I've got my eyes on:
Improving overall analysis skills, parallel programming, machine learning.

I want to know more about:
Parallel programming and machine learning.





Kai Wei

Graduate Student in Physics
The Ohio State University
CMS experiment
Kai.Wei@cern.ch

My research:

- Search for long-lived particle with disappearing track in CMS
- Dedicated trigger optimized for displaced objects for Run3 CMS

My expertise is:
PdmV Monte Carlo contact, data analysis with CMSSW, Delphes

A problem I'm grappling with:
Analysis for disappearing track and its background estimation

I've got my eyes on:
Simplified model and fast detector simulation.

I want to know more about:
ML for trigger and tracking algorithm

Daniel Wilbern

Graduate Student
University of Oklahoma
ATLAS Experiment
Daniel.Wilbern@cern.ch

My research:

- Search for vectorlike leptons (exotic particle)
- ATLAS ITK pixel detector upgrades

My expertise is:
Data analysis with ROOT and python, scripting and automation

A problem I'm grappling with:
Object definition and cut optimization for an exotic particle search

I've got my eyes on:
FPGA programming to communicate with ATLAS pixel detectors

I want to know more about:
Machine learning, parallelizing code

Argonne NATIONAL LABORATORY

ATLAS EXPERIMENT

Kak Wong

PhD Candidate in Physics
University of Maryland, College Park
kakw@umd.edu

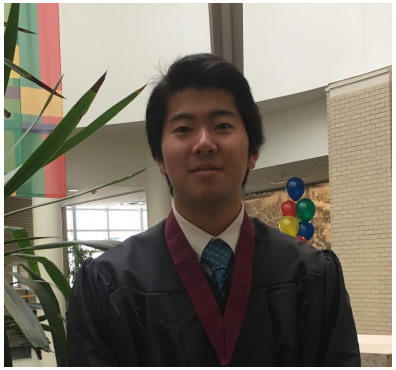
My research:
Search for Wgamma resonance in CMS experiment
Tier-3 cluster management

My expertise is:
CMSSW, PyROOT, cluster management

A problem I'm grappling with:
Managing MC samples over several years

I've got my eyes on:
Parallelization, distributed computing, machine learning, containers, jupyter notebook

I want to know more about:
Parallel coding paradigms



Riley Xu

1st year Ph.D.
University of Pennsylvania
ATLAS
rileyx@sas.upenn.edu

My research:
Writing simulation framework for the Hardware Tracking for Trigger (HTT) system, a run 4 upgrade. Writing firmware for HTT board SoCs and IPMI controllers.

My expertise is:
Software development, C++

A problem I'm grappling with:
Learning Verilog/Vivado

I've got my eyes on:
GPU integration in distributed systems (i.e. the GRID)

I want to know more about:
Machine learning

Penn
University of Pennsylvania

ATLAS
EXPERIMENT

Luis Felipe Gutierrez Zagazeta

1st year PhD student
University of Pennsylvania
luisfgz@sas.upenn.edu

My research:
Develop logic tests and probe station software for the testing of AMAC in the ATLAS ITk.

My expertise is:
HEP data analysis.

A problem I'm grappling with:
Automatization of selection requirements.

I've got my eyes on:
Machine learning for the optimization of selection requirements.

I want to know more about:
Machine learning and parallel programming.

Penn

ATLAS EXPERIMENT