



Arya Keni

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Education

Pennsylvania State University (May 2023)

Bachelor's of Science (B.S.), Computer Engineering, Minor: Physics

Cumulative GPA: 3.35/4.0

Awards: Dean's List (2x), Bunton-Waller Scholar (6x), Trustee Scholarship (Research),
Computer Engineer's Scholarship (Research), Academic Scholar (6x), Pell Grant (6x)

Clubs: DEVpsu, NDL, Students of CoE, PSU Robotics, ACM Member, IEEE Member

Aditya Birla World Academy (May 2019)

International Baccalaureate Diploma

Higher Level: Physics, Chemistry, Mathematics

Final IB Diploma Score: 35/45

Clubs: Innovation Group, Robotics Group

Stanford University (Aug 2018)

Certification, Electrical Engineering (Intensive Program)

Cumulative GPA: 3.3/4.0

Awards: Distinguished Student Scholarship, EE Intensive Diploma

Experience

Department of EECS at Penn State

Photonics Researcher (Giebink Labs) (August 2021-Present), ML Researcher (with Dr. Farooque)(June 2021-Present), ICSL (with Dr. Kiani)(August 2021-Present), LA for CMPSC 360(August 2021-Present)

Photonics Researcher:

Currently working on boosting efficiency through the metric of product lifetime of SSL WOLEDs. Simulated PVD (Particulate Vapor Deposition) Models for optimal coating classifications across multiple conditions, for specific 3D surfaces of substrates. Utilized machinery and apparatus for manufacturing, laser cutting, and PVD actualizations for categorizing substrate conditional coating. Currently working on metric classification on energy rating for lifetime cycle analysis. Publication pending.

ML Researcher:

Currently working on developing a TNN structure on improved efficiency and scope of Boolean Satisfiability Solving Capabilities: Developing the TNN that employs DpLL rules of SAT solving for UN/SAT core predictions on verification of a certain set of SAT problems, and parallel comparisons with the current developed NeuroSAT (employed in GNN). PrePublication for Part 1 of Paper Done.

ICSL Research Assistant:

Currently assisting ICSL PhD Student Group in Wireless Energy Transmission systems: Developing a Class E PA RF to Tx to Rx ME transmission system, with parametric efficiency and resonance modulation classification. Further modifications (and current work) on US (Ultrasound) modulation based emissions and receptions of long and complex signals

through the developed WPT (wireless power transmission) system via a highly refractive media.

CMPSC 360 Learning Assistant:

Held weekly office hours to solve problems and clear content issues, and graded submissions (for all students in all sections), Under Dr. Farooque: For Discrete Mathematics used in Computer Science. Taught Problem solving methods for all examinations conducted. Proctoring done.

SenseHawk

*Machine Learning and Stochastic Modeling Researcher **(Lead)** (Jun 2020-Present), in PA, USA; Systems Design and Computer Vision Research Intern (May 2021-Present), in Mumbai, India and Dubai, UAE*

Led the ML sub-team personally alongside Senior Software Engineer Kiran Hegde for development and testing of Q and Deep Q Learning behavior employed in Dual Axis Camera for tracking maximum irradiance. Researched, coded and proved mathematical aspects and simulated end-tasks personally. Presented the effects of developed models and improvements grafted from related research. Subsequently worked on inverter modeling with complete data flow from cloud server to interface with deployed scheduling based learning models in solar cell systems for a filtered alarm model to raise energy efficiency of solar cell systems.

PlantVillage

Geospatial Computation Research Assistant (Jan 2021-May 2021), Digital Imaging Research Assistant (Jan 2020-Mar 2020), in PA, USA

Worked in the Millennium Science Complex: Biomedical Engineering General Lab in Penn State (in Biomedical and CS Research Space) for computing geocentric capabilities of locating natural vegetation in specified regions of central Africa, and integrating the methodology on the PlantVillage App and Beta Website. Previously helped classify and organize plant related disease data with customized Neural Net in assigned regions.

Eberly College of Science at Penn State

Learning Assistant for: Classical Mechanics (Aug 2020-Dec 2020), Electromagnetic Processes (Jan 2021-May 2021) in PA, USA

Taught sections for PHYS 211 (with Dr. Costantino) and PHYS 212 (with Dr. Keim) in respective semester periods for course content review, practice and prepare new exam and homework related problems, and review and aid active online Laboratories on request. Office Hours for the same.

Nittany Data Labs

Conference Lecturer (in EECS Westgate podium, Oct 2019- Dec 2019), Project Research Manager (Sep 2019-Mar 2020) in PA, USA

Gave lectures in rotation for students (undergraduates) signed up for extra credit courses in CMPSC about introductory Machine Learning and the Mathematics behind it. Additionally led a Disney Research Team employed by NDL with a university contract to aid in image analysis of movie frames using a devised CNN.

Department of Chemical Engineering at Penn State

Lab Technician, Danner Lab (Sep 2019-Dec 2019) in PA, USA

Worked in the ChE Cryogenics Lab (Danner Laboratory) formulating computational models for low temperature gas phenomena in a user-accessible format while developing a GUI aided desktop program. Additionally, worked on the calibration and testing of circuitry in Phidget devices and monitoring DEWAR vessels. Personally guided by Dr. Ronald Danner.

National Institute of Standards and Technology

*Research Associate (**Lead**) (Sep 2017-Jun 2020) in CO, USA*

Associate in Division 647 for computational materials science and cryogenics, worked personally alongside Dr. Ray Radebaugh to incorporate a personally invented computational system to test bounds of live research on material properties.

Tata Institute of Fundamentals and Research

Research Associate **(Co-Lead)**, Low Temperature Facility Lab (Apr 2018-Mar 2019), in Mumbai (India)

Visiting Associate in Cryogenics division with consultation from VJTI (University) with Dr. K. V. Srinivasan to develop and research DEWAR vessel monitoring software for property analysis and communication network checking. Research Paper presented in Consortium (IIT Mumbai). Invented computational interface for current problem specificity.

Graduate School of Education in Stanford University

Research Associate **(Co-Lead)** (Jun 2018-Aug 2019), in Stanford, CA

Active development of related sensors and software for search engine based deterministic quantifiers in intrinsic human connections. Under the Department of Sociology in the Graduate School of Education, with Michael Hahn, PhD.

Awards and Acknowledgements

Best Presentation: NSCS 27 (2019)

Awarded the best presentation in the National Symposium for Cryogenics and Superconductivity in the Poster Category for defense and review of the research matter.

Finalist: Silicon Valley Innovation Academy (Stanford University, 2018)

Finalist for presentation on neuromorphic computational systems for diagnosing advanced diseases

Finalist: University of Technology, Sydney (2018)

Awarded Top 5 Finalist award for Research Group globally for work on Sensor Based analysis on CO2 emissions.

Finalist: Monash University (2018)

Awarded Top 5 Finalist award for research presentation on vehicle monitoring through autonomous sensor detections.

Publications

Research Papers:

A BRIEF ANALOGY ON NEURAL NETWORK EMPLOYMENTS ON SAT-SOLVING (ARXIV PREPUBLICATION, 2022)

STATISTICAL ANALYSIS OF ABALONE DATA FROM UC IRVINE FOR MIGRATION PATTERNS AND BIOPHYSICAL CHARACTERISTICS USING R (*JOURNAL OF APPLIED MATHEMATICS AND COMPUTATION*, 2021)

MATHEMATICAL AND COMPUTATIONAL ANALYSIS OF DEWAR VESSELS AND RELATED COMPONENTS USING DEVELOPED SOFTWARE SYSTEMS (*JOURNAL OF APPLIED MATHEMATICS AND COMPUTATION*, 2020)

COMPUTATIONAL SYSTEM BASED ANALYSIS OF CRYOCOOLER, REGENERATOR AND DEWAR IN WEB DESIGNED SOFTWARE AND APPLICATION BASED SOFTWARE (*OAJRC PHYSICS*, 2020)

DEVELOPMENT OF NETWORKED MEGASTRUCTURE IN COMPUTATIONAL REGENERATOR AND CRYOCOOLER SYSTEMS FOR DETAILED ANALYSIS AND PREDICTIONS (*INDIAN CRYOGENICS COUNCIL ISSUE*, 2019; *27TH NATIONAL SYMPOSIUM ON CRYOGENICS AND SUPERCONDUCTIVITY*, 2019)

ML AND TREE-HASH BASED COMPUTATIONAL SYSTEMS IN MATERIALS SCIENCE AND DATA PREDICTIONS FOR MANUFACTURING BASES (*JOURNAL OF APPLIED MATERIALS SCIENCE [CANADA]*, 2019)

PORTABLE SYSTEMS ANALYSIS OF CRYOGENIC AND MATERIAL DATABASES WITH MULTI-FACETED MATHEMATICAL TOOLS AND PROBABILISTIC ENVIRONMENTS (*PARALLEL AND DISTRIBUTED COMPUTING AND NETWORKS*, 2018)

COGNITIVE ANALYSIS PLATFORM OF CRYOGENIC SIMULATIONS, DATA, SPECIFICATIONS, AND APPARATUS CONDITIONS UNDER A MULTI-PROBABILITY SYSTEM (*INDIAN JOURNAL OF CRYOGENICS*, 2018)

CRYOGENIC MATERIAL MANUFACTURING, TESTING AND ENVIRONMENT TESTING BASED CONDITIONS SIMULATION PLATFORM FOR ADDITIVE ANALYSIS AND ESTIMATED PROTOTYPING OF MATERIAL PRODUCTS AND SYSTEMS (*INTERNATIONAL JOURNAL OF ENGINEERING, SCIENCE AND INNOVATION*, 2018)

Patents:

US 16735608 (2020): USPTO Publication Number: US 2020/0183924 A1 (with Michael Hahn, PhD.)

US 16734333 (2020): Under review, Foreign License Granted

US 16112650 (2020): USPTO Publication Number: US 2020/0042867 A1

US 16101405 (2020): USPTO Publication Number: US 2020/0064318 A1

US 16537583 (2021): USPTO Publication Number: US 2020/0050679 A1

US 16537584 (2021): USPTO Publication Number: US 2021/043322 A1

2 more US Patents Filed: Progress TBD

Certifications

Learning Assistant: Penn State University

Certified under the Eberly College of Science and College of Engineering with a pedagogy trial to teach and hold academic positions for courses under a professor.

Mentor for EECS: Mentor Collective

Mentor for Sophomore and Freshmen Undergraduates in EECS fields for exposure to appropriate resources and with guidance for job or research related material.

Skills Summary

Research Fields and Interests: Photonics, Organic PV Systems, OptoElectronics, Computational Cryogenics, Stochastic Computing, Machine Learning and Optimization, Nanofabrication, Integrated Circuits and Systems

Instruments/Lab Operations: IC Fabrication, Multisim (NI Products), SPICE, Xilinx, EDA, #D Printing, FPGA Modeling

Programming Languages: Python, SystemVerilog, VHDL, Java, HTML, CSS, Javascript, C, C++, .NET, MATLAB, perl, Assembly (x86)

Databases: MongoDB, SQL, SQLite, postGRE-SQL

Frameworks: React, Angular, Git, Docker, Kubernetes, Django, Redux, Bootstrap, Vue, Node, Apache, Bash

Cloud Services: AWS, Azure

Languages: English, Hindi, Marathi, Sanskrit

Standardized Testing:

ACT with Writing: 34/36 with 11/12

SAT 2 MATH Level 2: 800/800

SAT 2 Physics: 770/800

GRE: TBD/340

Personal Reference Links:

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