Dulitha Jayakodige

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EDUCATION

- **Ph.D. in Theoretical Nuclear Physics** 05/2024
  Hampton University, Hampton, VA
  Thesis Title: Pion Nucleon Scattering in BChPT combined with $1/N_c$ Expansion
  Advisor: Dr. Jose L. Goity
- **B.Sc.(Hons) in Physics,** 01/2015
  University of Colombo, Sri Lanka
  Thesis Title: Mathematical Model of a Cross Flow Steam Condensor
  Advisor: Dr. Hiran Jayaweera

OTHER CERTIFICATIONS

- **Statistics with Python Specialization by University of Michigan** 02/2024
  (credentials : https://www.coursera.org/account/accomplishments/verify/KQSHC9GKDK88)
- **Deep Learning Specialization by DeepLearning.AI** 11/2022
  (credentials : https://www.coursera.org/account/accomplishments/specialization/JT7GSMPBQ2NF)
- **IBM Data Science Certificate** 03/2022
  (credentials : https://www.coursera.org/account/accomplishments/professional-cert/87SKD667PENA)

RESEARCH EXPERIENCE

- **Graduate Research Assistant** 05/2019 - Present
  Department of Physics, Hampton University, Hampton, VA
  - Developed a Pion Nucleon Scattering Effective Theory based on Baryon Chiral Perturbation Theory(BChPT) combined with $1/N_c$ Expansion
  - Developed the theory to Next to Next to Leading Order in the expansion and applied to the analysis of Pion Nucleon Scattering data
  - Built Mathematica programs to assist and verify calculations
  - Developed data cleaning, analyzing, and visualizing programs using Python
- **Graduate Research Assistant** 06/2019 - 09/2019
  Department of Physics, Hampton University, Hampton, VA
  - Assisted in assembling GEM detectors for the JLab BONuS12 experiment
  - Assisted in detector testing process
- **Graduate Research Assistant** 01/2016 - 04/2019
  Graduate Physics Research Center, Hampton University, Hampton,VA
  - Designed a Quantum Ghost Imaging experiment and prototyped it with a Monte Carlo simulation using Python
  - Built a data collection software to detect photons from a photomultiplier tube using MATLAB

- **Undergraduate Research Assistant** 01/2014 - 01/2015
  Centre for Instrument Development, University of Colombo, Sri Lanka
  - Developed a model for the efficiency of a single pass cross-flow steam condenser
  - Found the optimal design for the steam condenser through the optimization of numerous constraints using MATLAB

TEACHING EXPERIENCE

- Teaching Assistant, Hampton University, Hampton, VA 01/2016 - 12/2016
- Teaching Assistant, University of Colombo, Sri Lanka 02/2015 - 12/2015

SKILLS

- **Programming**: Python (numpy, pandas, matplotlib, seaborn, plotly, scikit-learn, iminuit, tensorflow), Mathematica, MATLAB, SQL, LaTeX
- **Technical**: Data analysis, Data wrangling, Data visualization, Machine learning (Regressions, Decision Trees, k-Nearest Neighbor, Neural Networks, CNN), Monte Carlo simulation
- **Soft**: Excellent written and verbal communication, Presentation skills, Working with multi-disciplinary teams, Adaptability, Curiosity to learn advanced technologies

AWARDS

- 1^{st} place - Hampton University SOS Research Symposium Oral Presentation 04/2023
- 2^{nd} place - Artificial Intelligence for the Electron-Ion Collider Hackathon 10/2022

SUMMER SCHOOLS

- CFNS-CTEQ Summer School on the Physics of the Electron-Ion Collider 06/2023
- Hampton University Graduate Studies Program(HUGS) 06/2021

SERVICES

- President of the Physics Student Group, Hampton University, VA 01/2023 - Present
- Volunteer at the open house at Hampton University, VA 04/01/2022
- Volunteer at the career fair at Lake Taylor Middle School, Norfolk, VA 04/11/2019
- Volunteer at the career fair at Lake Taylor Middle School, Norfolk, VA 03/29/2018
- Volunteer at the open house at Hampton University, VA 04/07/2017
- Volunteer at the career fair at Lake Taylor Middle School, Norfolk, VA 04/21/2016
- President of the Physics Society, University of Colombo, Sri Lanka 08/2014 - 08/2015
- President of the Chess Club, Taxila Central College, Sri Lanka 01/2009 - 01/2010

OTHER PROJECTS (portfolio : https://dulithajayakodige.github.io//)

- **Classifying Pions and Kaons** (AI4EIC Hackathon)
  - CNN was trained to classify Pion and Kaon from Cherenkov detector data
  - Model could classify with above 97% accuracy
  - Received the 2^{nd} place at the hackathon(10 teams participated)
- **Classifying Bacteria Types** (Kaggle Competition)
  - RandomForestClassifier from scikit-learn was used to identify the bacteria types based on their contributions to each ATGC composition
  - This model could predict the type of bacteria with above 98% accuracy
- **HUBC TERMINAL Hackathon**
  - Built a Python algorithm to fight against opponents' algorithm's strategies
  - Received 10^{th} place (21 teams participated)

PRESENTATIONS

- **Dulitha Jayakodige** and Jose L. Goity **"Pion Nucleon Scattering in BChPT combined with $1/N_c$ Expansion"**, presented at the Physics Seminar, Hampton University, October 19, 2023
- **Dulitha Jayakodige** and Jose L. Goity **"Pion Nucleon Scattering in BChPT combined with $1/N_c$ Expansion"**, presented at the School of Science Research Symposium, Hampton University, April 13, 2023
- **Dulitha Jayakodige** and Jose L. Goity **"Pion Nucleon Scattering in BChPT combined with $1/N_c$ Expansion"**, presented at the School of Science Research Symposium, Hampton University, April 8, 2022
- **Dulitha Jayakodige** and Jose L. Goity **"Pion Nucleon Scattering in BChPT combined with $1/N_c$ Expansion"**, presented at the HUGS summer school, June 16, 2021
- **Dulitha Jayakodige** and Jose L. Goity **"Pion Nucleon Scattering in BChPT combined with $1/N_c$ Expansion"**, presented at the Department of Physics, Hampton University, February 11, 2021
- **Dulitha Jayakodige**, Tikaram Neupane, Sheng Yu, Bagher Tabibi, Jia Su, Pat McCormick, William Moore, and Felix Jaetae Seo **"Carbon Dioxide Concentration Measurements with Quantum Ghost Imaging"**, presented at NASA Site Visit (Technical Review Committee from NASA Armstrong Center and NASA Langley Research Center) on January 25, 2018
- **Dulitha Jayakodige** Felix Jaetae Seo, Jia Su, Quinton Rice, William Moore, Pat McCormick, Bagher Tabibi **"Quantum Nonlinear Interferometry for Occultation Satellite Remote Sensing"**, presented at the APS Division of Atomic, Molecular and Optical Physics Meeting, June 8, 2017