Nilay Kushawaha

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EDUCATION

PhD in Biorobotics & AI (October 2022 - present)

Sant'Anna School of Advanced Studies, Pisa, Italy

- Credits : 20 ECTS
- Relevant Coursework : Machine Learning, Brain Inspired Control, Finite Elements Methods, Deep Learning for Medical Imaging, Robot Programming, Ethics in AI

Master of Science (Physics) **(**July 2020 – July 2022)

Indian Institute of Technology, Indore

- CGPA : 8.65 (out of 10)
- Relevant Coursework : Mathematical Physics, Statistical Mechanics, Classical mechanics, Quantum Mechanics

Bachelor of Science (Physics) (August 2017 – July 2020)

University of Delhi , Delhi

- CGPA : 8.459 (out of 10)
- Relevant Coursework : Introduction to Programming, Linear Algebra, Numerical Methods, Computational Physics

EXPERIENCE

1. **Master's research student with Dr. Yulia Furletova (Jefferson Lab, United States)** *(July 2020 – July 2022)*
   - Model **GEM TRD** detector and radiator using Geant4 simulation software to generate data
   - Attach the **radiator** to the main detector setup using DD4hep software.
   - Apply suitable **ML/DL** algorithm on the data to separate signal from background noise.
   - Paper : Kushawaha, Nilay, et al."Separation of electrons from pions in GEM TRD using deep learning." *arXiv preprint arXiv:2303.10776* (2023).
2. **Data Science Intern**

   The Sparks Foundation *(May 2021 - June 2021)*

RECENT PUBLICATIONS

1. **Nilay Kushawah, Lorenzo et al.** "SynapNet: A Complementary Learning System Inspired Algorithm With Real-Time Application in Multimodal Perception." *IEEE Transactions on Neural Networks and Learning Systems* (2024) – Published.
2. **Nilay Kushawaha, Radan et al.** "Adaptive Drift Compensation for Soft Sensorized Finger Using Continual Learning" – Accepted in *IEEE Robosoft Conference 2025*.
3. **Nilay Kushawah, Egidio Falotico.** "Continual Learning for Multimodal Data Fusion of a Soft Gripper." *arXiv preprint arXiv:2409.13792* (2024) – Under review in *Expert System With Applications*.
4. **Nilay Kushawaha, Egidio et al.** "Domain Translation of a Soft Robotics Arm Using Conditional Cycle Generative Adversarial Network." – To be submitted to *IEEE ECAI-PNAS 2025*.

SKILLS

- **Programming Languages :** Python, C++, Scilab
- **Web Designing :** HTML/HTML5, CSS
- **AI Skills :** Statistics, Machine Learning, Deep Learning, Continual Learning, Reinforcement Learning

- **Platforms & Misc. :** Google Colab, Jupyter, VScode, Spyder, PyCharm, Hypothesis testing, Pandas, Numpy, Matplotlib, Seaborn, Scikit-learn, Tensorflow, Keras, Pytorch, Arduino, Basics of Ethical Hacking, SQL, ROS, Model free control, LabView
- **Soft Skills :** Leadership, Teamwork, Adaptability

TRAINING & CERTIFICATIONS

- Advanced Course on Data Science & Machine Learning (ACDL 2024)

  ACDL, June 2024
- Machine Learning Using Python

  Skyfi Labs, May 2020
- Fundamentals of Deep Learning

  Nvidia, June 2021
- 1st Indian Workshop on Artificial Intelligence

  IIT Indore, March 2021

POSITIONS OF RESPONSIBILITY

- Creation of 4 hour tutorial video on "Advancements in Continual Learning for Robotics" for Ebrains-Italy project (https://ebrains-italy.eu/)
- Student Coordinator, Dept. of Physics, IIT Indore
- Robotics Club Coordinator, DDUC, University of Delhi