

Anil Radhakrishnan

Computational Physics PhD with 8 years of research and 15 year of programming experience

CONTACT

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EDUCATION

NC STATE UNIVERSITY

PHD IN PHYSICS

May 2025 | Raleigh, NC

UNIVERSITY OF ILLINOIS

BSc IN PHYSICS

Dec 2019 | Urbana-Champaign, IL
Minor in Mathematics

SKILLS

CODING LANGUAGES

Proficient: • Python • \LaTeX • BASH • C/C++

Familiar: • Julia • MATLAB •

Mathematica • HTML • CSS • Rust • CUDA

LIBRARIES

• Pytorch* • JAX • NumPy • SciPy • scikit-learn • Equinox* • Optax • DiffraX* • Pandas • wandb

TOOLS

• git • quarto • Linux

* Contributor

HONORS

- Graduate School Summer Fellowship (2022)
- Lee Teng Undergraduate Fellowship (Summer 2018)
- Lorella M. Jones Undergraduate Research Award (2019)
- LAS James Scholar (Spring 2017–Spring 2018)
- Dean's List (Fall 2016–Fall 2017)

LANGUAGES

- English (Bilingual Proficiency)
- Hindi (Full Professional Proficiency)
- Arabic (Limited Working Proficiency)
- Malayalam (Native Proficiency)

EXPERIENCE

NC STATE UNIVERSITY | NONLINEAR DYNAMICS & DEEP LEARNING (DL)

Aug 2020 – Present | Raleigh, NC | Dr. William Ditto

Dissertation on Differentiable programming with Nonlinear Dynamics

- Showed increased expressivity in neural networks through metalearning of activation functions(Published, Patent Pending)
- Crafted gradient based optimization framework for reconfigurable nonlinear logic gates(Preprint available, Patent Pending)
- Improved neural network convergence by growing neurons in situ during training(Preprint available, Patent Pending)
- Controlled noisy chaotic dynamics using self-supervised neural network to configure stochastically integrated complex systems

UNIVERSITY OF ILLINOIS | CERN | HIGH ENERGY PHYSICS DL

Aug 2018 – July 2020 | Urbana, IL | Dr. Benjamin Hooberman

- Developed NLP inspired neural network architectures in PyTorch to process data from the ATLAS Detector
- Maintained public codebase to compare effectiveness of contemporary techniques
- Setup integration of model into ATHENA(root/c++) framework

FERMILAB | LEE TENG FELLOW | APPLIED SUPERCONDUCTIVITY

May 2018 – August 2018 | Batavia, IL | Dr. Mattia Checchin

- Performed and analyzed vertical radio-frequency(RF) tests of superconducting RF cavities in the framework of Fermilab's high-gradient high-Q research
- Simulated effect of impurity layer on superconductors to compare with theory
- Achieved a 48x increase in data processing efficiency by automating key sections of the processing pipeline

UNIVERSITY OF ILLINOIS | CONDENSED MATTER

Aug 2016 – May 2018 | Urbana, IL | Dr. Virginia Lorenz

- Designed and fabricated thin films for use in magneto-optic experiments
- Analyzed feasibility and laid foundation for second harmonic optical system to image the magnetic ordering of ferromagnets and metallic antiferromagnets
- Findings lead to publication in Nature Nanotechnology

TEACHING

TEACHING ASSISTANTSHIP | NC STATE

Fall 2020 – Spring 2025 | Raleigh, NC

- Taught and graded >100 students in various introductory labs
- Managed, maintained, and supervised physics undergraduate research labs
- Managed and supervised undergraduate teaching assistants(7 TAs)
- Created computational and organizational resources for physics major courses

PATENTS/INVENTIONS

- K. M. RUSSELL, W. L. Ditto, A. Choudhary, **A. Radhakrishnan**, and J. F. Lindner, Diversity Based Deep Learning System, WO2023196858A1 (12 October 2023).
- NCSU Disclosures: • Gradient Based Optimization of Chaogates(10 October, 2024)•Evolving large neural networks from small ones(10 September, 2024)

PUBLICATIONS

For full publication list, please see  <https://orcid.org/0000-0002-8084-9527>