Anil Radhakrishnan

| Curriculum Vitae |

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Senior undergraduate student in physics. Passionate about physics and using programming and computational skills to solve or gain better understanding of problems in physics

Education

Academic Qualifications

- **University of Illinois at Urbana Champaign** — **Illinois, United States of America**
  Bachelor of Science in Physics, Minor in Mathematics — *2016–2020*
- **Delhi Private School** — **Sharjah, United Arab Emirates**
  High School Diploma — *April 2016*

Honors/Awards

- **Lorella M. Jones Summer Research Award (2019)** *Department of Physics Honors*
  This award supports summer research positions for outstanding undergraduate physics students. I was presented this award to support my research with Professor Benjamin Hooberman
- **Lee Teng Undergraduate Fellowship (Summer 2018)** *Illinois Accelerator Institute*
  11 week internship at Fermilab in combination with Fundamentals of Accelerator Physics Course at U.S. Particle Accelerator School(USPAS)
- **Dean's List (Fall 2016-Fall 2017)** *College of Liberal Arts and Sciences*
  The Dean's List is prepared each semester to honor all full-time students whose grade-point average (GPA) for that semester ranks in the upper 20 percent of their college.
- **LAS James Scholar (Spring 2017- Spring 2018)** *College of Liberal Arts and Sciences Honors*
  The James Scholar Honors Program at the University of Illinois provides opportunities for high achieving students to go beyond what is required by their normal course load and do more detailed honor courses either by taking course that have work targeted towards honor students or by working with a professor to do additional projects that help develop a deeper understanding of course material.

Employment

- **University of Illinois at Urbana-Champaign** **IL**
  Undergraduate Researcher: Computational(Experimental)High Energy *August 2018–present*

  I worked on using deep learning algorithms to classify prompt leptons from heavy flavor leptons in events from the ATLAS detector at CERN under Dr. Benjamin Hooberman. This involves maintaining a public codebase accessible to the group and other collaborators where new techniques can be implemented to compare their effectiveness. The priliminary version of the Recurrent Neural Net developed for the task was presented at the 3^{rd} ATLAS Machine Learning Workshop.

- **Fermi National Accelerator Laboratory** **IL**
  Lee Teng Undergraduate Fellowship: Applied Superconductivity *May 2018–August 2018*

  I worked under Dr. Mattia Checchin to study the effects of enriched surface layer on Superconducting RF cavities. This involved vertical testing of cavities and developing code to efficiently analyze the data and perform theoretical simulations. The data processing code that was developed for this improved computational processing speeds 50x and also allowed for effortless handling of bulk data.

- **University of Illinois at Urbana-Champaign** **IL**
  Undergraduate Researcher: Experimental Condensed matter *October 2016–May 2018*

  I was involved in a spin dynamics project under Dr.Virginia Lorenz. I worked in collaboration with a graduate student for preparing and characterizing samples for Time Resolved MOKE measurements of heavy metal and ferromagnetic thin films, I also worked on python simulations to help assist in finding what is expected from experiments. Additionally, I was in charge of setting up an optical system for using magnetization induced second harmonic signals to image the magnetic ordering of ferromagnets and later metallic antiferromagnets.
  The paper from the work on magnetic thin films has been accepted for publication by nature nanotechnology.

- **Delhi Private School** **Sharjah, United Arab Emirates**
  Instructional Laboratory Assistant *March 2016–July 2016*

  I worked in the Physics lab of my high school after graduation to assist teachers in helping the students better understand concepts by devising experiments that would aid in their learning. This involved ensuring that the lab equipment and circuits were set up correctly so that the students can utilize their time in the lab most efficiently. I also systematized the method of recording data that the students used so that their analysis becomes easier and they can focus on the physics of the situation. This involved sketching out a plan by which teachers can use electronic equipment which was previously underutilized in the lab and use computer programs to analyze data.

Technical and Personal skills

- **Programming Languages:** • Proficient in: C++, Python, Julia, Matlab, Labview, LaTeX• Familiar with: C, HTML, BASH.
- **Industry Software Skills:** • AutoCAD, OriginPro, Microsoft Office Suite, Linux, Windows
- **Technical Skills:** Working experience in : Cleanroom Photolithography (Lift-off and Ion Mill), DC Magnetron Sputtering, Atomic Layer Deposition, X-ray Reflectivity measurement, 4-point

probe measurements for sample characterization, Vertical Testing for superconducting cavities, Using Ultrafast Femtosecond lasers and designing and setting up optical systems,designing and printing 3d structures on desktop 3d printer, soldering and machining

- **Languages:** English (Bilingual Proficiency), Hindi (Minimum Professional Proficiency), Malayalam (Native Proficiency)

Interests and extra-curricular activity

- I was the Vice-President of the Society of Physics Students, UIUC chapter for the year 2018. I founded an undergraduate journal club where students are invited to pick a peer-reviewed journal and discuss its significance with their peers and also present their own research. I was also incharge of representing the organizations to people outside of the University and organizing annual tours to national labs for the members.
- I am also extensively involved in Physics outreach projects and was the outreach officer for the Society of Physics Students for the year of 2017. Along with few other students I performed interesting physics demos before and after the Saturday Physics for Everyone, which are public lectures given every alternate Saturday in the fall semester. I was also in charge of the physics demos done by Society during Engineering Open House, a science fair conducted by the University targeted towards exposing the public towards interesting science.

References

- available on request

Publications

Tao; Amin Vivek P.; Wang Yang; Radhakrishnan Anil; Davidson Angie; Allen Shane R.; Silva T. J.; Ohldag Hendrik; Balzar Davor; Zink Barry L.; Haney Paul M.; Xiao John Q.; Cahill David G.; Lorenz Virginia O.; Fan Xin Wang, Wenrui; Wang. Dataset for "anomalous spin-orbit torques in magnetic single-layer films" , 2019.