

ASHWIN KUMAR K

Contact

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Education

- 2022 BITS - PILANI UNIVERSITY, KK BIRLA GOA CAMPUS
Int. MSc. Physics and B.E Electronics and Instrumentation (Dual Major) CGPA - 7.5/10.0
- 2017 VVS GJ PU COLLEGE, MYSORE - CLASS 12th
KSEB Board. Marks : Physics - 100%, Chemistry - 96 %, Mathematics 99%
- 2015 DEMONSTRATION SCHOOL - CLASS 10th
CBSE Board. 9.8/10 CGPA
- All India Rank in competitive examinations: TOEFL (score) 106/120, NGPE- Top 30, KVPY-55, ComedK - 113, KCET - 592.

Interests

Experimental condensed matter physics (Device Physics).

Interfacing sensors with microcontrollers (Arduino, Raspberry Pi, or other equivalent platform), Power management, electrical drive system, Instrument design.

Solving real-world problems using Distributed Ledger Technology.

Projects and Experiences

Past Projects

- Design of a cryogenic probe for transport measurements at *Superconductivity lab, NISER, Bhubaneswar, India.*
- Design and Simulation of Battery Management System Algorithms for Electric Vehicle Applications. *Kaynes Technology India Pvt Limited, Mysore, India.*
- Simulation of IR seeker missiles and its counter measure in *Defence Avionics Research Establishment - DRDO, Bangalore, India.*
- Determination of temperature of stars by analysing images obtained from a simple camera.
- **A Novel Stove Stand:** Designed and built a contraption to harness electricity (about 20W) from the otherwise wasted heat energy produced while burning LPG gas for cooking. It also reduced the cooking time.
- **Pressure sensitive mat:** A mat that can sense touch, enabling the determination of different poses such as Running, Jumping, Rightward-leftward movement, one leg hop etc.. (Worked in electronics and algorithm design).
- Past electronics team member of **Hyperloop India** and **Project Kratos**.

For more completed projects visit my web page, ashwinschronicles.github.io

Ongoing Projects

- Studying the effect of high spin orbit coupling material in Josephson Junctions, at *Superconductivity lab, NISER, Bhubaneswar, India*.
- **GrayBlock Power:** Decentralized financing of energy projects via smart contracts written on public blockchains. (Working as project coordinator)
- **Team Imitato:** Designing an exosuit to control a humanoid that can be beneficial in reaching in-accessible and non-human conditions. (Working as Electronics, Communication and Haptics Control head)

Honors and Awards

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| 2019 | National top 30 in NGPE-19 exam (out of 11372 candidates). |
| 2019 | 3 rd place in Open CBR Hackathon <i>organised by University of Leeds</i> . |
| 2018 | Presented a paper entitled “Algorithms in ancient Indian Mathematics and Astronomy” at “National Conference on Ancient Indian Knowledge: Science and Technology”, <i>National Council of Educational Research and Training, New Delhi</i> . |
| 2018 | Awarded Kishore Vaigyanik Protsahan Yojana (KVPY) 2017 Fellowship by <i>Govt. of India</i> . |
| 2018 | Offered Innovation in Science Pursuit for Inspired Research (INSPIRE) 2017 Scholarship by <i>Govt. of India</i> . |
| 2016 | Awarded ISCA Travel award by <i>Infosys Foundation</i> . |
| 2016 | Participated in 103 rd Indian Science Congress held at Mysore, India. |
| 2016 | Participated in IRIS science fair organised by <i>Intel</i> at Delhi, India. |
| 2015 | Participated in Rashtriya Kishore Vaigyanik Sammelan of 102 nd Indian Science Congress held at Mumbai, India. |
| 2014 | Participated in 41 st Jawaharlal Nehru National Science Exhibition at Chandigarh (Presenting the device stated as “A Novel Stove Stand”). |

Articles and Publications

Review articles on scientific and hobbyist instruments on element14.com

“Gravitational waves really exist!”. *Dream 2047 (Vigyanprasar)*, “Gravitational waves really exist!”. *Dream 2047 (Vigyanprasar)*, 18(7): 28–29, Apr. 2016.

Relevant Coursework

Physics : • Electromagnetic theory I&II • Classical Mechanics • Statistical Mechanics • Quantum Mechanics I&II • Non-Linear Dynamics • Nanotechnology and Nanosensors, Part1&2 - Israel Institute of Technology (Coursera) • Topology in Condensed Matter: Tying Quantum Knots - DelftX University (edx) • Quantum Information and Computing • Solid State Physics • Atomic and molecular Physics • Nuclear and Particle Physics • Quantum Information Theory

Electronics : • Microelectronics • Microprocessors and interfacing • Digital circuits • Electric Machines • Specialisation on Semiconductor Devices - University of Colorado Boulder (Coursera) • Introduction to Data Science in Python-University of Michigan (Coursera) • Signals and Systems • Control Systems • Digital Image Processing • Modern Control Systems • Analog and Digital VLSI design • Transducers and measurement techniques • Electronics instruments & instrumentation technology • Object Oriented Programming • Introduction to High-Performance and Parallel Computing - University of Colorado Boulder (Coursera)

Skills

Computational: • Shell • Python (automation and data analysis) • LabVIEW • Matlab • JavaScript • \LaTeX • C++ • Git • Verilog • 3D CAD modeling (Fusion 360) • PCB Design (Eagle CAD)

Instrumentation: • Photolithography • DC Magnetron sputtering • Physical Property Measurement System (DCR and VSM)

List of Referees

1. PROF. KARTIKESWAR SENAPATI
Reader F
School of Physical Sciences
National Institute of Science Education and Research,
Bhubaneswar – 752050, Odisha, India.
Email: kartik@niser.ac.in
2. PROF. RAM SHANKER PATEL
Associate Professor
Department of Physics
Birla Institute of Technology and Science Pilani - K K Birla Goa Campus,
Zuarinagar – 403726, Goa, India.
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3. DR. DHAVALA SURI
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