

## ASHWIN KUMAR K

### Contact

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### Education

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- 2022 BITS - PILANI UNIVERSITY, KK BIRLA GOA CAMPUS  
*Int. MSc. Physics and B.E Electronics and Instrumentation (Dual Major) CGPA - 7.2/10.0*
- 2017 VVS GJ PU COLLEGE, MYSORE - CLASS 12<sup>th</sup>  
*KSEB Board. Marks : Physics - 100%, Chemistry - 96 %, Mathematics 99%*
- 2015 DEMONSTRATION SCHOOL - CLASS 10<sup>th</sup>  
*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

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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

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#### 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](http://ashwinschronicles.github.io)

## Ongoing Projects

- Study of Josephson Junction fabrication and characterisation, 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 <sup>rd</sup> 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 <sup>rd</sup> 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 <sup>nd</sup> Indian Science Congress held at Mumbai, India.
2014	Participated in 41 <sup>st</sup> Jawaharlal Nehru National Science Exhibition at Chandigarh (Presenting the device stated as “A Novel Stove Stand”).

## Articles and Publications

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Review articles on scientific and hobbyist instruments on [element14.com](http://element14.com)

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

## Relevant Coursework

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**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

## Skills

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**Computational:** • Shell • Python (automation and data analysis) • LabVIEW • Matlab • JavaScript • L<sup>A</sup>T<sub>E</sub>X • 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

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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,*  
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