

## ASHWIN KUMAR K

### Contact

---

*ashwinkumar.k.rao@gmail.com, f20171034@goa.bits-pilani.ac.in ,ashwinschronicles.github.io*

### Education

---

- 2022 BITS - PILANI UNIVERSITY, KK BIRLA GOA CAMPUS  
*Int. MSc. Physics and B.E Electronics and Instrumentation (Dual Major) CGPA - 7/10.0*
- 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: NGPE- Top 30, KVPY-55, ComedK - 113, KCET - 592 JEE Main - 13900 JEE ADV - 24000 .

### 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.

### Projects and Experiences

---

#### Past Projects

- Simulation of IR seeker missiles and its counter measure in *Defence Avionics Research Establishment - DRDO, Bangalore, India.*
- Design of a cryogenic probe for transport measurements at *Superconductivity lab, NISER, Bhubaneswar, 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:** To make 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](https://ashwinschronicles.github.io)

## Ongoing Projects

- Design of a low cost thermal evaporation deposition system Design and optimisation of a thermal evaporation coater unit. (As the project head)
- **Open source IoT router:** Design of a completely open source IoT router hardware based on the RISC-V ISA. (As the project head)
- **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

---

2019	National top 30 in NGPE-19 exam (out of 11372 candidates).
2019	3 <sup>rd</sup> place in Open CBR Hackathon organised by University of Leeds.
2018	Presented a paper entitled “Algorithms in ancient Indian Mathematics and Astronomy” at “National Conference on Ancient Indian Knowledge: Science and Technology”, NCERT, New Delhi.
2018	Awarded KVPY 2017 Fellowship.
2018	Offered INSPIRE 2017 Scholarship.
2016	Awarded ISCA Travel award by Infosys Foundation.
2016	Participated in 103 <sup>rd</sup> Indian Science Congress held at Mysore, India.
2016	Participated in IRIS science fair organised by Intel at Delhi, India.
2016	Participated in Google science fair.
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

---

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

---

**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

**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

## Computational Skills

---

• Shell • Python • Matlab • L<sup>A</sup>T<sub>E</sub>X • C++ • Verilog

## 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.*  
*Email: rsp@goa.bits-pilani.ac.in*
3. DR. DHAVALA SURI  
*Postdoctoral Associate*  
*Francis Bitter Magnet Laboratory & Plasma Science and Fusion Center,*  
*Massachusetts Institute of Technology,*  
*Cambridge – 02139, Massachusetts, USA.*  
*Email: dmsuri@mit.edu*