

Prashant Sharma

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IISER Thiruvananthapuram , India

Education

- **BSMS (Mathematics Major and Physics Minor)** 2019-2024
Indian Institute of Science Education and Research, Thiruvananthapuram, • Kerala, India
(BSMS is a research-oriented Dual Degree program)
- **Central Board of Secondary Education, Higher Secondary School** 2017-2019
Rajkiya Pratibha Vikas Vidyalaya, Vasant Kunj • New Delhi, India

Skills

- **Programming Languages:** C, C#, .Net, C++, Python(Panda, TensorFlow), Dart, Flutter, SCIPi Commands
- **Tools:** Solid-Works, KiCad, Proteus, Unity Engine, Android Studio, MATLAB, ANSYS MoRIA, Git, Docker
- **Reflex:** Instrumentation, 3D Printing, UAV Pilot, DJ

Publication

- Kumar, S., Jha, R. K., **Sharma, P. K.**, & Goswami, A. **Design and development of a horizontal contact separated (HCS) test setup for measuring the performance of triboelectric nanogenerator for sustainable energy harvesting applications**, *Review of Scientific Instruments*, doi.org/10.1063/5.0190787. 2024, March

Research Experience

- **"Instrumental Setup For 6 Channel Gas Sensor Array"** Jul'24-Present
Project under Dr. Vinayak B Kamble, Assistant Professor SMART Lab
IISER TVM
 - Designed and implemented software to heat and read Six IDE(s) at the same time via serial communication with an Arduino Mega, with precise temperature regulation through PWM duty cycle adjustments.
 - published software for measurements using Keithley 6510 and six-channel Digital Power Supply.
 - Engineered and fabricated a six-channel digital power Supply that includes a custom PCB, integrating an LCD display and joystick controller for the user interface.
- **"Classification of Gas-Sensor Array data using Machine Learning "** Aug'23-Apr'24
Major project under Dr. Dharmatti Sheetal, Assistant Professor School of Mathematics
IISER TVM
 - Developed a Python library from scratch for dimensionality reduction using Principal Component Analysis (PCA)
 - Applied K-Nearest Neighbors (KNN), Decision Tree, and Neural Networks as classifiers to analyze gas sensor data and identify various gases
 - Constructed a two-layer neural network to enhance classification accuracy
- **"Instrumentation Design and Computer Interfacing of Physical Measurement System"** Jan'23-May'23
Minor Project under Dr. Vinayak B Kamble, Assistant Professor SMART Lab
IISER TVM
 - Developed a web-based version of a Lock-In Amplifier using a Red Pitaya (FPGA) board
 - Designed and implemented a circuit to maintain constant temperature control for a 20mW heater
 - Interfaced an LVDT (Linear Variable Differential Transformer) with an Arduino and Keithley meter to accurately measure small displacements

"Web App: Sugar Coaster"

Copyright Project under [Dr. Veda Krishnan](#), Senior Scientist at ICAR-IARI

This game is designed to enhance the understanding of glycemic responses in various daily-consumed foods, targeting audiences from children to diabetic patients

Click [here](#) to play

- Built the app using Dart and Flutter framework
- published on GitHub

Feb'24-Mar'24
ICAR
New Delhi

"Finding Solution to Celestial Sphere problems using Spherical Trigonometry"

Online Internship under [Dr Anil Kumar Gourishetty](#), Professor

- Study of spherical astronomy and eclipse formation from the Book W. Smart
- built a MATLAB Program to solve problems in spherical trigonometry
- Prepared Digital illustrative notes for a basic astronomy course
- created tutorials for the same

Jan'23-Aug'23
Department of
Physics
IIT Roorkee

"In-house-built test setup for measuring the performance of triboelectric nanogenerator"

Summer Internship under [Dr Ankur Goswami](#), Assistant Professor

- Designed a 3D Model for the Concept of an in-house-built test setup for measuring the performance of the triboelectric nanogenerator and also did the Interfacing and troubleshooting of the setup starting from scratch
- A Highly Sensitive Force measure device using Arduino was also constructed

Jul'22-Aug'22
Department of
Material Science
and Engineering
IIT Delhi

"3D Design of Automated Robotic Coating Machine for Cars"

Industrial Internship at P3C Technology & Solutions Pvt Ltd.

- Utilized SolidWorks to design a 3D model and create animations for a robotic coating machine for cars
- Troubleshoot and optimized the performance of the robotic coating system to ensure operational efficiency

Jul'22-Aug'22
Gurugram, Haryana

Self-Motivated Projects

"Android App: Social Media App for Campus"

This app was approved by the council for operation on the IISER TVM campus

- Provides a social media platform for students to post pictures, ask questions, sell items, and access information like the mess menu and other campus services
- Developed using Dart and Flutter, with Google AdSense integrated for in-app advertisements
- Successfully published on the Google Play Store

Sep'23-Present

"Android Game: Dino Running"

click [here](#) to download, play and review

- Used dart and flutter to build the game
- used Google AdSense to add advertisements inside the game
- published on Play Store

Oct'23-present

"MIDI/DJ Controller with Arduino"

- Developed using an Arduino Nano for analog-to-digital conversion and three 16-channel multiplexers for 32 analog and 16 digital inputs
- Interfaced with VirtualDJ software via a virtual serial port to MIDI converter
- Designed a custom case and personally used the controller at DJ events, where it received positive feedback

Oct'22-Feb'23

“DVI output with RP2040”

Jul'22-Nov'22

- Implemented DVI output on a 32" LCD screen using a Raspberry Pi Pico and a GitHub repository
- Added a real-time clock to create a stopwatch for a conference or talk use

“AID-BOT: Homemade Autonomous UAV for Air-Dropping Medicines in Remote Areas”

Aug'20-Nov'21

- Utilized an Arduino Nano as the flight controller and additional Arduino units to construct the transmitter and receiver
- Built a fixed-wing craft using repurposed materials, capable of manually dropping a payload of approximately 400g

Achievements

- A member of the organizing committee of Indo-German Workshop on Thermoelectric Devices for Emerging Applications (IG-WTEA)-IISER TVM India
- Online teaching to neighbourhood high school students during the COVID-19 pandemic.
- Won the Physics Expo in 2019, organized by IISER TVM.
- Coordinator of Science and Cultural fests at IISER TVM
- Won various prizes in debate, poem recitation, and narration at school and college levels.
- DJ at fest events of IISER TVM with my own DJ controller, students loved it

Degree Courses

APPLIED MATHEMATICS: Calculus Linear Algebra Numerical Analysis Statistics Theory of ODE PDE Number Theory and Cryptography

PURE MATHEMATICS: Real Analysis Theory of Groups and Rings Complex Analysis Fields, Modules and Algebras General Topology Probability Theory and Stochastic Process Analysis on Manifolds Measure Theory Commutative Algebra

PROGRAMING: Mathematical Tools Programming and Data Structures Artificial Intelligence Financial Engineering

PHYSICS: Mechanics Electromagnetism Optics Thermal and Statistical Physics Condensed Matter Physics Experimental Methods Electronics Advanced Mathematical Methods in Physics

BIOLOGY: Diversity and Evolution Biological Structure and function Genetics and Molecular Biology Cell Biology and Signaling

CHEMISTRY: Atomic Structure and Chemical Bonding Concepts in Inorganic Chemistry Basic Concepts in Organic Chemistry Principles of Physical Chemistry Instrumental Methods Organic Chemistry

MISCELLANEOUS: Communication Skills Intro to Economics Intro to Sociology Planning and Economic Development

References**Dr Vinayak B Kamble**

Assistant Professor Grade I
SMART Lab, School of Physics
Indian Institute of Science Education and Research
Thiruvananthapuram (IISER-TVM)
Thiruvananthapuram, 695551, Kerala, India
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Dr Dharmatti Sheetal

Associate Professor
School of Mathematics
Indian Institute of Science Education and Research
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