Vedant Basu
Engineering Physics
Indian Institute of Technology Bombay

15D260013
UG Second Year
Male
DOB: 03/06/1997

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2017	9.32
Intermediate/+2	ISC	Sishya School Chennai	2015	98.00
Matriculation	ICSE	Sishya School Chennai	2013	96.70

ACADEMIC ACHIEVEMENTS

- Placed within 99.90 percentile in the **JEE Advanced** Entrance Exam 2015, and achieved a National Rank of 491 in the **JEE Mains** 2015 competitive Exam
- Awarded the **Kishore Vaigyanik Protsahan Yojana** Fellowship in Basic Sciences 2015, initiated and funded by the Government of India, to attract exceptionally highly motivated students for pursuing research in science.
- Awarded the **INSPIRE** scholarship for placing in the top 0.1 % in the ISC Standard 12 Examination
- Placed within the top 30 ranks worldwide in the **Fermat Contest** conducted by the Centre for Excellence in Mathematics and Computing, University of Waterloo, Ontario, Canada.
- Awarded the School Champion Prize in the **Cayley Contest** also conducted in association with the Centre for Excellence in Mathematics and Computing, University of Waterloo.
- Currently pursuing a Minor in Electrical Engineering and Honours in Engineering Physics

TECHNICAL SKILLS

Computer Languages	C++, MATLAB,Java, Scratch,Python
Software & Tools	COMSOL, LaTeX,AutoCAD, SolidWorks, AtmelStudio
Hardware Platforms	Raspberry Pi, AVR

TECHNICAL EXPERIENCE

Pratham: A student-built Microsatellite **[Spring 2016-Present]**

· Interfacing of the Onboard Computer with the sensors and actuators installed on satellite.
· Extracting data from GPS sensor and calculating the output currents to Magnetotorquers.
· Testing communication protocols like SPI and UART between various microcontrollers.
· Suggested employment of Electrodynamic Tether for deorbiting of satellite after completion of mission

Embedded Systems **[Winter 2015]**

· Designed a **Line Following Robot** based on an **ATmega32** microcontroller
· Implemented **Voice Control** using Google Voice APIs on Raspberry Pi, which can be readily extended to home automation and other applications
· Built a **Turing Machine** implemented on a Raspberry Pi

PROJECTS

Fringe Capacitance Modelling in AlGaN-GaN HEMTs **[Summer 2016]**
Summer Undergraduate Research Project
Guide: Prof. Dipankar Saha,Department of Electrical Engineering,IIT Bombay

· Worked on analysis of parasitic capacitances in an AlGaN High Electron Mobility Transistor,as a function of Gate Length and thickness of oxide layer
· Constructed COMSOL models to simulate the capacitance for a simplified model considering the device in zero gate-source bias mode.
· Extrapolated the characteristics under bias as an extension of the switched off device characteristics

Detector Physics **[Fall 2016]**

Guide: Prof. Pradeep Sarin,Department of Physics,IIT Bombay

· Worked on High Energy Detectors using **Avalanche Photodiodes**.The inherent avalanche gain mechanism along with the amplifier results in a magnified signal when a particle passes through the detector.

· Studying **Constant Fraction Discriminators**, an electronic signal processing device, designed to find a maximum of a pulse by finding the zero of its slope. The principle precludes the effects of time-walk, which occurs in a simple comparator.

Nonlinear Dynamics **[Fall 2016]**

Supervised by Professor Amitabha Nandi,Department of Physics, IIT Bombay

· Chaotic dynamics in Low-Energy Orbit Transfers. Examination of the Weak Stability Boundary of the Earth-Sun-Moon Lagrangian Points to facilitate ballistic capture for satellites in orbit.

Digital Electronics **[Spring 2016]**

Supervised by Professor Mahesh B Patil,Department of Electrical Engineering,IIT Bombay

· Designed a Barrel Multiplier to implement a shifting digital multiplication algorithm. This finds application in the processing of floating point arithmetic

Battlepults **[Fall 2015]**

Supervised by Professor Varsha Apte, Department of Computer Science,IIT Bombay

· Designed and coded an interactive two player game based on a simple physics package

· GUI based on the graphics library of C++

Mecanum Wheel **[Fall 2015]**

Supervised by Professor K.P Karunakaran, Department of Mechanical Engineering, IIT Bombay

· Designed a SolidWorks model of a symmetric **Mecanum Wheel**, an alternative to caterpillar tracks and standard wheels for use in constrained areas .

· The wheel allows omnidirectional motion and in-place rotation with minimal ground friction and low torque.

RELEVANT COURSES

Nonlinear Dynamics*	Digital Electronics
Ordinary Differential Equations	Fundamentals of Programming
Complex Analysis	Linear Algebra
Data Analysis and Interpretation*	Thermodynamics*
Electricity and Magnetism	Classical Mechanics*
Signals and Systems*	Relativistic Dynamics
Quantum Physics and Applications	Multivariable Calculus

*-Ongoing

EXTRACURRICULAR ACTIVITIES

- Volunteered at the NGO 'Right To Education' under the National Service Scheme,to teach underprivileged children Maths, English and Basic Sciences
- Won the ASISC State Quiz Competition 2014, Tamil Nadu, a senior level Quiz Competition for CISCE Schools in the state of Tamil Nadu
- Participated in the ABK-AOTS DOSOKAI Quiz on Japan, 2014
- Served as Vice Captain of School House for the year 2014-2015
- Completed the **Royal Yachting Association** Level I Dinghy and Catamaran sailing courses