Vidya Sagar Vobbilisetti

Université Paris-Saclay

✉ mail@vidyasagarv.com   •   ⌂ Web: https://vidyasagarv.com/

Education

Program	Institution	Marks	Year of completion
○ Master 2 NPAC	○ Université Paris-Saclay	○ **15.56/20**	○ 2020
○ Bachelor of Technology, Engineering Physics	○ Indian Institute of Technology Madras	○ **7.81/10**	○ 2019
○ XII Std. (TS state board)	○ Narayana Junior College, Hyderabad	○ **94.6%**	○ 2015
○ X Std. (TS state board)	○ Vidya Dayini High School, Hyderabad	○ **8.6/10**	○ 2013

Test Scores

- ○ **GRE General Test**: **322/340** (152(Q), 170(V), 3.5(A))
- ○ **TOEFL iBT**: **109/120** (29(R), 29(L), 25(S), 26(W))

Research Experience

1. Anomalous magnetic moment of τ at the Belle II experiment   **March - June 2020**

Guide: Dr. Karim Trabelsi, IJC Lab, Université Paris-Saclay   *Internship*

- ○ Worked on efficiently reconstructing the τ direction to approximate $F_2(0) = a_\tau$ by fitting spin-independent differential cross section.

2. Improvements in muon identification based of the Belle Detector   **May - July 2017**

Guide: Dr. Gagan Mohanty, Tata Institute of Fundamental Research   *Summer internship*

- ○ Explored the possibility of optimising muon identification based on information from inner sub-detectors of the **Belle experiment**.
- ○ Started with the fundamentals of statistical learning and further developed an artificial neural network using Monte Carlo simulated events from the experiment.
- ○ Observed **muon identification efficiencies of 96.8% and 99.4%** when discriminating against pions and kaons, respectively, for a given **fake rate of 0.7%**.

3. Improvements in muon identification of the Belle Detector (cont.)   *August 2017 - June 2019*

Guide: Dr. Jim Libby, Department of Physics, IIT Madras   *Bachelor's Thesis Project*

- ○ Included calorimeter information to the above analysis.
- ○ Improving the muon identification primarily for **low-momentum muons**, those which may not reach K-Long and Muon (KLM) Detector.
- ○ Analysed the CP violating rare decay $D^0 \to \pi^0 \mu^+ \mu^-$ using the improved muon identification.

4. Partitions - Number theory   **August 2016 - March 2017**

Guide: Dr. Suresh Govindarajan, Department of Physics, IIT Madras

- ○ Computationally found the number of 7-dimensional partitions whose 8-dimensional Ferrers Diagrams fit into a volume of hypercube of side 2 and **reproduced the results in A269699** using the Bratley-McKay algorithm.
- ○ Worked on refining the Wiedemann computation of M[8] by computing T(8,k) for k=0,1,...,256.

5. Exoplanet Identification   **August 2017 - November 2017**

Club: Astronomy and Physics, Center for Innovation, IIT Madras

- Applied **Convolutional Neural Network** on the **NASA's Kepler data** to identify exoplanets based on the principle of **Transit Photometry**.
- A reliable classifier is obtained despite having heavy data imbalance of 200:1.

Scholastic Achievements

- Awarded the Univeristé Paris-Saclay **IDEX scholarship**.
- Awarded **Charpak scholarship** by Campus France - India.
- Recipient of **Best Project Award** in High Energy Physics Department for my work at the Tata Institute of Fundamental Research.
- Selected for **Visiting Student Research Programme (VSRP)** at the **Tata Institute of Fundamental Research (TIFR)**.
- Presented my work on muon identification at **Belle Analysis Workshop - 2017**, which took place in MNIT, Jaipur, India.

Skills

- **Languages and Markup**: C++, Python, HTML
- **Softwares and Packages**: ROOT, TMVA, NumPy, matplotlib, Mathematica, MATLAB, scikit-learn, TensorFlow, LTSpice, Verilog, CAD
- **Operating Systems**: Linux, Windows
- **Documentation**: LaTeX

Extra-Curricular Activities

Technical Affairs Secretary
- Elected and served as the Technical Affairs Secretary of Saraswathi Hostel to lead the teams in all inter-hostel technical competitions including manual robotics, semi-autonomous robotics and quad-copter design.

Science Communication
- Exploring science communication through blogging at `www.vidyasagarv.com` and producing videos and podcasts.

Leadership and Organization
- Member of the organizing committee of Bhoutics, the annual physics fest of the Physics Department, IIT Madras in its founding year and the next (2016, 2017).

Community Engagement
- Taught essential sciences to 3 government schools covering 240 students in the form of video lectures as a part of National Service Scheme.

Sports
- Finished three 5km runs
- Finished one 21km cyclothon.