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SAHIL R. ADANE

EDUCATION

M.A. in Public Policy with a Certificate in Research Methods, Sept. 2022-
Harris School of Public Policy, University of Chicago G.P.A. 4.0/4.0

B.Tech. in Engineering Physics, July 2016-June 2020
Indian Institute of Technology (IIT) Bombay, India G.P.A. 8.49/10.0

EXPERIENCE

Systems Engineer, Sedemac Mechatronics Pvt. Ltd., India, August 2020-May 2022
Developing control technologies for electronic fuel injection for internal combustion engines

Optimal calibration process for a chosen air-estimation model, July-Oct. 2021

- Collected data at diverse operating conditions to fit an air-estimation model for simulations
- Performed regression analysis for different models followed by diagnostics for ordinary least squares estimation to find an interpretable model providing accuracy comparable to stock strategies
- Designed future experiments by choosing a suitable optimality criterion for the chosen model to reduce the cost of calibration while maintaining prediction accuracy

Proof-of-concept of stock electronic fuel injection strategies, Dec. 2020-June 2021

- Studied the physics under corner-cases and benchmarked a competitor's control unit
- Inferred system response after writing scripts for data-cleaning and visualization
- Enhanced the model by incorporating new insights to demonstrate a working prototype

Research Intern, University of Luxembourg, May-July 2019
Supervisor: Prof. Ludger Wirtz, Dept. of Physics, University of Luxembourg

Understanding Raman spectra of Cu_2GeS_3 using ZnS with application in photovoltaics

- Developed a force model using first principles by testing different interatomic potentials
- Compared models by defining a loss function using experimental data and model estimates
- Simulated the change in intensity peaks in Raman spectrum of Cu_2GeS_3 relative to those in spectrum of ZnS by studying intermediate hypothetical lattice structures

SCHOLASTIC ACHIEVEMENTS

Secured an All India Rank of **755** out of **0.2 million** candidates in JEE Advanced, May 2016
Awarded the National Talent Search Examination (NTSE) Scholarship awarded to students with 99.8+ percentile, May 2012

TECHNICAL SKILLS

Coding languages: Python, R, MATLAB Utilities: Version control with Git

RELEVANT COURSES

Introduction to Economics, Industrial Economics, Environmental Studies, Data Analysis and Interpretation (Introduction to Statistics and Probability), Linear Algebra, Single and Multivariable Calculus, Differential Equations, Numerical Analysis, Introduction to Programming with C++

ACADEMIC PROJECTS

Differential forms, Group Theory and Physics (Supervised Learning Project), July-Nov 2018
Supervisor: Prof. P. Ramadevi, Dept. of Physics, IIT Bombay

- Studied the abstract formalism of differential geometry and its simplifications under specific conditions to known theorems and operators in multivariable calculus
- Examined the nice interplay of group theory symmetries and the conservation laws in field theory, in this case the connections to Chern-Simons theory

Study of BTZ Blackhole and Green's Functions, General Relativity, May-July 2018
Supervisor: Prof. Urjit Yajnik, Dept. of Physics, IIT Bombay

- Studied structural and geometrical properties of 2+1 Dimensional (BTZ) Blackhole and analogies with Kerr blackhole following the paper by M. Banados, C. Teitelboim, J. Zanelli
- Explored Feynman's Path Integral Approach as an introduction to application of Green's functions in Quantum Field Theory for scalar fields
- Identified BTZ Blackhole background as a quotient space of covering space of Anti-DeSitter spacetime and used method of images to relate the Green's function for the two spacetimes as done by S. Carlip

POSITIONS OF RESPONSIBILITY

Academic Mentor, Department Academic Mentorship team, Dept. of Physics Mar 2019
Selected among 14 mentors based on interviews, peer reviews, and overall performance

- Mentored 6 sophomores to ensure their smooth transition into Physics department
- Conducted course reviews and AMAs with professors to increase student-professor interaction

Teaching Assistant, Course: Quantum Physics and Applications, May 2018
One of the 4 TAs for the summer course under Prof. M. Aslam, Dept. of Physics, IIT Bombay

- Conducted TA sessions for 20 students, and involved in setting up and evaluation of exams

EXTRA-CURRICULARS

Attended GROWTH Winter School to learn astronomical data-analysis techniques, Dec. 2018
Conceptualized and edited video that won 3rd place in Freshiezza Music Video Competition amongst undergraduate freshers, Aug. 2016
Completed one year of training in Volleyball by National Sports Organization, 2016-2017
Part of School Cricket Team that won Under-14 Giles Shield, Plate Division, Mumbai, 2014