

# Siddharth Dixit

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## EDUCATION

### SHIV NADAR UNIVERSITY BS IN MATHEMATICS(MAJOR) & COMPUTER SCIENCE(MINOR) (4 YEARS) WITH SPECIALIZATION IN ARTIFICIAL INTELLIGENCE

Graduating: 2021 | India, 201314

CGPA 7.28/10

INTERMEDIATE: 94%

HIGH SCHOOL: 93.4%

(aggregate of 99% in  
Maths+Computer Science)

## RELEVANT COURSES

- Big Data Technologies °
- Mathematical Finance °
- Time Series & Forecasting °
- Deep Learning
- Machine Learning through R
- Optimization
- Bayesian Networks °
- Partial Differential Equations
- Dynamical Systems
- Design and Analysis of Algorithms
- Linear Algebra- I, II
- Probability and Randomized Algorithms
- Genetic Algorithms

## SKILLS

### PROGRAMMING LANGUAGES

- R • Python • Java • C • SQL

### TOOLS & FRAMEWORKS PYTHON

- Scikit Learn, Keras,  $H_2O$ , Flask, Tensorflow, Pyspark

### R

- Caret, AutoML, BNlearn, Keras
- Model specific packages in R

## BLOG

- Writing articles on Data Science at Medium which have collectively received over 50k views.
- Editor at Medium/SNU.ai

## WORK EXPERIENCE

### TEACHING ASSISTANT, DEEP LEARNING Present

- Serving as the Teaching Assistant for MAT-494: Deep Learning (Monsoon-2020) being taught to 3<sup>rd</sup> & 4<sup>th</sup> year students at Shiv Nadar University
- Conducting lab sessions covering implementations in R/Python & assisting in the development of course contents.
- Co-supervising student projects in Deep Learning which are related to my area of Predictive Modelling as a part of this course.

### RESEARCH INTERN, IIT ROORKEE Apr-July, 2020

- Developed a 2 step Machine Learning approach to deal with small datasets frequently encountered in Materials Informatics.
- Built soft voting classifiers to model highly imbalanced data.
- Modified Classification to an Anomaly detection problem for identifying new and promising Thermoelectric Oxides from over 2000 unexplored compounds.

### VISITING RESEARCH SCHOLAR, UNIVERSITY OF LUXEMBOURG

Feb-Mar, 2020 | Ongoing Remotely due to COVID'19

- Studied different Deep Learning architectures used for solving and discovering Physics related Partial Differential Equations.
- Currently collaborating with the Legato Team of Prof. Stephane Bordas on Energy based Deep Learning models which serve as surrogate to FEM for assessing Breast deformations during Mammography.

### RESEARCHER, ALAN TURING INSTITUTE, LONDON AUG 2019

- Part of a cross-functional team of 10 researchers and data scientists tasked to tackle the problem of Air Pollution in Bristol City Center using Machine Learning.
- Worked on identifying location-wise  $NO_x$  predictors & developing Predictive ML models linking Climate & Air Pollution Data.
- Collaborated closely with the team working on Traffic Data.
- Analyzed the model results & provided data-driven suggestions which could be used by the Bristol government to reduce air pollution in their City Center.

## PUBLICATIONS

### CONFERENCES

- "Machine learning approaches to identify and design low thermal conductivity oxide alloys for thermoelectric applications"
  1. 2019, ECI: Composites at Lake Louise, Alberta, Canada(Accepted but not presented)
  2. FAIRDI for Materials Genomics, Berlin 3-5 June, 2020

### JOURNAL

- "Get Bristol moving: Tackling air pollution in Bristol city centre" - Grey Paper by Alan Turing Institute.
- "Network learning approaches to study Happiness"- under review in Journal of Computational Social Sciences, Springer.
- "Machine learning approaches to identify and design low Thermal Conductivity Oxide Alloys for Thermoelectric applications"- in Cambridge University Press.

° Ongoing

## RESEARCH PROJECTS

### **UNDERSTANDING WORLD HAPPINESS** AUG 2019- July-2020 | SNU

- Performed Literature review on using AI techniques for studying Happiness, Loneliness and Pre-processed the UN Open Data.
- Built a series of Predictive ML, Deep Learning models to accurately forecast a countries Happiness Index for upcoming years.
- Learned a Bayesian Network to understand the causal effects of factors affecting happiness.

### **DEEP LEARNING FOR POLLEN CONCENTRATION PREDICTION** JAN 2020

- Pre-processed open pollen data recorded daily from 1992-present.
- Studying the factors & climatic conditions affecting Pollen concentrations of 31 species in air and their Harmful affects
- Built 5 different types of RNNs viz. Multivariate RNN, Elman Network, Jordan Network, GRU, LSTM & briefly studied their underlying mathematics.

### **STATISTICAL LEARNING OF BATTERY LIFETIME PREDICTIONS** Dec 2019- Present | IIT Roorkee

- Performed literature review on the degradation of Lithium Ion batteries and the Deep Learning approaches used in the past.
- Pre-processed high-frequency data of charge and discharge cycles of Li-ion batteries.
- Currently working on a Physics-based ML model by building a stochastic differential equation with its coefficients learned from data.

### **LUXEMBOURG VEHICLE POLLUTION CONTROL MODEL** APRIL-MAY,2019 |University of Luxembourg

- Built a Random Forest model using Société Nationale de Circulation Automobile open data.
- The model can be used by various car manufacturers to keep a check on the Co2 emissions of the Vehicles being designed by them, on top of that it can also be used to improve their fuel efficiency.

## PROGRAMMING PROJECTS

### **EMOZERS** JAN-FEB,2018 | Shiv Nadar University

- Created an emotion based music web-application with face-ID Login System using Python Flask
- Modified Microsoft Emotion (M.E.) API to accept local stream of images
- Integrated M.E. API results with a randomized algorithm to create a unique shuffle option for playing songs based on the users' mood
- Applied data analytics to help tailor a better experience for the user over time

## POSITIONS OF RESPONSIBILITY

### **FOUNDER: SNU.AI** JAN,2020 | Shiv Nadar University

- Appointed by the Director of Research at SNU to start a club to focus on AI research at the undergraduate level.
- Formed the core committee by interviewing over 50 candidates and founded SNU.ai at Shiv Nadar University to promote AI Research across different disciplines.
- Mentored over 100 undergrads to learn ML apply it to research projects within their field of interest.
- Organized talks & webinars with eminent AI researchers from different parts of the world.
- Started as the editor of a Medium Publication which serves as a platform to SNU students for showcasing their knowledge & writing articles in areas related to AI & its applications.

## ACCOMPLISHMENTS

- Awarded Vice Chancellors funding of \$1100 as travel scholarship.
- Youngest participant to be selected amongst 50 AI researchers to participate in Data Study Group organized by the Alan Turing Institute & hosted by the University of Bristol.
- Won 2nd Prize of the dot tech Category & a registered domain for 1 year for our Web App - Emozers in Hack Data 2.0 organized by Shiv Nadar University during 10-11th Feb 2018 in which over 25 teams from different colleges had participated. We were also one of the three teams who managed to present a fully working Web App within 30 hours.
- Awarded a scholarship of 50% on the Tuition Fee for pursuing a BS in Mathematics & Computer Science at Shiv Nadar University, India.