# 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

- Bayesian Networks
- Time Series & Forecasting
- Deep Learning
- Machine Learning through R
- Partial Differential Equations
- Optimization
- Dynamical Systems
- Big Data Technologies
- Mathematical Finance
- Design and Analysis of Algorithms
- Linear Algebra
- 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 $3^{rd}$ & $4^{th}$ 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.
• Modfied 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
• Youngest researcher amongst a crossfunctional team of 10 researchers and data scientists.
• Worked on different feature selection techniques and developing Predictive ML models linking Climate and Air Pollution Data.
• Collaborated closely with the team working on Traffic Data.
• Analyzed the model results and provided data-driven suggestions which could be used by the govt. to reduce air pollution.

## 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" (Accepted. Currently in press) Data Centric Engineering, Cambridge University Press.

# 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 and 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 and 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 stohastic 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 and apply it to research projects within their field of interest.
•Organized talks and 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 and writing articles in areas related to AI and 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 and hosted by the University of Bristol.
- Won 2nd Prize of the dot tech Category and 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.