

NIDADAVOLU KAPIL CHANDRA

University of Texas at Austin

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<https://nkc-137.github.io/>

EDUCATION

- **Univeristy of Texas at Austin** Austin, Texas
Master's in Computational Science, Engineering, and Mathematics 2019 – 2021
- **Indian Institute of Technology Madras** Chennai, India
Dual Degree in Metallurgical and Materials Engineering; **CGPA**: 8.80/10 2014 – 2019
 - Dual Degree Class Rank: 4
 - Minor: **Physics**

PUBLICATIONS

- “Modeling macroscopic material behavior with machine learning algorithms trained by micromechanical simulations ” [PDF]
Authors: Denise Reimann, Kapil Nidadavolu, Hamad ul Hassan, Napat Vajragupta, Tobias Glasmachers, Philipp Junker, Alexander Hartmaier

SCHOLASTIC ACHIEVEMENTS

- **One among 400 candidates** all over India to be selected for the SRFP¹, 2017 to pursue a research internship in Indian Institute of Science, Bengaluru
- **One among 4 candidates** in my institute to be awarded a **pre-placement interview** for working in American Express on account of outstanding performance in **Amex Analyze This, 2018** Comptetition [Link]
- Achieved **All India Rank - 3384** in Joint Entrance Examination - 2014 (98th percentile)

PROJECTS

* RESEARCH PROJECTS

Development of Atomistic Potentials for Ag Nanoclusters using ML

- *Master's Thesis, IIT Madras* Aug '18 – May '19
Guide: Dr. Satyesh Kumar Yadav
 - Performed first principle calculations for Ag nanoclusters using **VASP** over **OpenMPI framework**
 - Developed a complete pipeline involving unsupervised and supervised learning techniques using **scikit-learn**, implementing **Kernel Ridge Regression** in conjunction with an atomic fingerprinting system to fit the force fields of Ag

Structure-Property linkages using Machine Learning

- *Research intern at ICAMS Lab, Germany* May '18 – March '19
Guides: Prof. Alexander Hartmaier, Dr. Napat Vajragupta
 - Developed machine learning models to replace a non-local crystal plasticity model
 - Achieved an **accuracy of 97.9%** on grain size distribution predictions from flow curve data
 - Performed feature engineering using Modified Voce Law to improve accuracy of the model

Development of memory efficient phase field model [Link]

- *Research Intern at Indian Institute of Science, Bengaluru* May '17 – July '17
Guides: Prof. T.A. Abinandanan and Dr. Abhik Choudhury
 - Implemented a phase field model for grain growth during recrystallization based on the paper Computer simulations of 2-D and 3-D ideal grain growth by Kim, Kim and Suzuki, in C
 - Developed a memory efficient code by using **dynamic memory allocation** and **linked lists** which reduced the space complexity of algorithm from $\mathcal{O}(\text{no.of grains} \times x \times y)$ to $\mathcal{O}(1 \times x \times y)$

¹Summer Research Fellowship Program

★ COURSE PROJECTS

Machine Learning for Engineering and Scientific Applications

- *Course Project, IIT Madras*

Jan '18 – April '18

Instructors: Dr. Balaji Srinivasan, Dr. Ganapathy Krishnamurthi

- Implemented CNN² in **TensorFlow** to classify MNIST dataset and obtained an accuracy of **98.4%**
- Developed codes for Linear Regression, Logistic Regression and ANN³ from scratch in Python without using already available frameworks
- Implemented high performance gradient descent optimization algorithms like **Adam**, **Adagrad** and **RMSprop** from scratch in Python

Computational Materials Engineering Lab

- *Course Project, IIT Madras*

Aug '17 – Dec '17

Instructors: Prof. G Phanikumar, Dr. Kanjarla Anand, Dr. Parasuraman Swaminathan

- Implemented **isotropic and anisotropic dendritic growth** model based on the paper "Modeling and numerical simulations of dendritic crystal growth" by Ryo Kobayashi, in **Matlab**
- Devised algorithms for image processing tools like Object Counting and Edge Detection in MATLAB
- Implemented algorithms for solving ordinary partial differential equations in MATLAB

★ SELF MOTIVATED PROJECTS

- **Online Automation Tools [Link]**

Python Script

- Developed scripts in Python which can automatically book train tickets online
- Developed automatic mass SMS sender using **Selenium** and **Beautiful Soup** module in Python

PUBLICATIONS

- Reimann, Denise; Nidadavolu, Kapil; Hassan, Hamad ul; Vajragupta, Napat; Glasmachers, Tobias; Junker, Philipp; et al. (2019): Modeling Macroscopic Material Behavior With Machine Learning Algorithms Trained by Micromechanical Simulations. Frontiers. Collection.

TEACHING ASSISTANTSHIP

- **Computational Materials Engineering Lab**

Guides: Prof. G Phanikumar, Dr. Kanjarla Anand, Dr. Parasuraman Swaminathan Aug '18 – Dec '18

- Assisted undergraduate students to understand concepts and clarified their doubts inside and outside the class

COURSEWORK

- **Algorithms & Computing:** Data Structures and Algorithms, Statistical Models for Big Data, Bayesian Statistical Methods
- **Machine Learning and Deep Learning:** Machine Learning, Neural Networks and Deep Learning, Improving Deep Neural Networks, Introduction to Data Science In Python, Reinforcement Learning
- **Materials Science & Physics:** Computational Materials Engineering Lab, Atomistic Modeling of Materials, Quantum Physics

TECHNOLOGY SUMMARY

- **Programming & Scripting Languages:** Python, C, R, SQL, Fortran, BASH Shell
- **Machine Learning Frameworks:** TensorFlow, Keras, Scikit-Learn
- **Miscellaneous Tools:** MATLAB, L^AT_EX, Git

²Convolutional Neural Networks

³Artificial Neural Networks

CO CURRICULAR & EXTRA CURRICULAR ACTIVITIES

- **Data Science Competitions**

- Ranked 12th out of 1500+ teams all over India in **Amex Analyze This** competition, 2018
- Awarded a **Pre-Placement Interview** offer for working in American Express on account of outstanding performance in the competition
- Regular participant in data science competitions on the campus and on online platforms like Kaggle