## Contact

www.linkedin.com/in/arun-92-baskaran (LinkedIn)

## Top Skills

Python
Data Engineering
Computational Modeling

## Publications

Adaptive Characterization of Microstructure Dataset using a Two Stage Machine Learning Approach

Numerical modeling of Ti-6Al-4V microstructure evolution for thermomechanical process control

Effect of initial variance of microstructures on grain growth under mean curvature

Image-driven discriminative and generative machine learning algorithms for establishing microstructure-processing relationships

# Arun Baskaran

ML Modeling Engineer at Corning Incorporated
Corning, New York, United States

## Summary

I am completing a PhD in Computational Material Science at Rensselaer Polytechnic Institute, from where I also hold a Masters degree in Computer Science. As a PhD student, I have experience in implementing Machine Learning models, statistical techniques, and developing software for scientific computing. In addition to my technical skillset, I possess strong collaborative and communication skills, and an ability to break down big-picture goals into achievable modules.

Skills:

Programming Languages:  C++ (5+ years), Python (3+ years), C (2 years)
Data Engineering: AWS, Git, Bash, Apache Spark, PostgreSQL, TimescaleDB, Grafana
Libraries: Pandas, OpenCV, FFT, scikit-learn, Keras, OpenMP
Machine Learning Framework: TensorFlow
Statistical Techniques: Hypothesis testing, Linear regression, Neural networks, Support Vector Machines

## Experience

### Corning Incorporated
Machine Learning Modeling Engineer
June 2022 - Present (11 months)
Corning, New York, United States

### Argonne National Laboratory
Postdoctoral Researcher
March 2021 - June 2022 (1 year 4 months)

### Insight Data Science
Data Engineering Fellow
May 2020 - March 2021 (11 months)

New York, United States

- Implemented a pipeline to load and process a public air-quality dataset of 300GB, and built a Timescale database on the AWS platform towards spatio-temporal analysis of the data.
- Implemented user-defined functions to ensure data quality,  and schema transformation to make the database efficient for queries.
- Utilized the distributed processing power of Spark to index the sensor locations in the raw data with postal codes for user-friendly spatial queries.
- Benchmarked the improvement in the latency of analytical queries on Postgres after adding the TimescaleDB extension.

## Rensselaer Polytechnic Institute

6 years 8 months

### Research Assistant

August 2016 - March 2021 (4 years 8 months)

Troy, New York, United States

- Performed feature engineering, through Principal Component Analysis, to generate quantitative fingerprints for a dataset of microscope images.
- Designed and trained a predictive model using a Convolutional Neural Network to classify titanium-alloy microscope images into its structural classes, followed by class-specific feature segmentation.
- Collaborated in a project implementing a Generative Adversarial Network to create artificial images of material structures, where I analyzed the domain-specific utility and drawbacks of this technique.
- Led a study to review the adoption of computer vision techniques in material science, and outline the domain-specific best practices.

### Teaching Assistant

August 2014 - July 2016 (2 years)

Troy, New York, United States

-Involved in curriculum development of lab sections for an introductory course in material science, geared towards enhancing communication of abstract concepts to first-year undergraduate students.

## Tata Steel India

### Summer Intern

May 2013 - July 2013 (3 months)

Design of ferrite + retained austenite alloy at room temperature for improved ductility

Ashok Leyland
Intern , Research & Development (Metallurgy)
May 2012 - June 2012 (2 months)

## Education

### Rensselaer Polytechnic Institute

Doctor of Philosophy (Ph.D.), Materials Engineering · (2014 - 2020)

### Rensselaer Polytechnic Institute

Master's degree, Computer Science · (2017 - 2019)

### IIT-Madras , Dept of Metallurgical & Materials Engg.

Bachelor of Technology (BTech), Metallurgical & Materials Engineering · (2010 - 2014)

### Maharishi Vidya Mandir Senior Secondary School (2008-10)

· (2008 - 2010)