

Arun

Baskaran



02 November 1992



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Education

Ph.D in Material Science & Engg,
Rensselaer Polytechnic Institute, Troy
NY | GPA : 3.58 | Aug 2014-Feb 2020

MS in Computer Science & Engg,
Rensselaer Polytechnic Institute, Troy,
NY | GPA : 3.40 | Jan 2018-May 2019

B.Tech in Metallurgical & Materials
Engg, IIT-Madras, India | GPA :
8.1/10 | Aug 2010-May 2014

Skills

OOP Languages - C++, Python
Parallel Computing Platforms - MPI
ML Frameworks - TensorFlow, Keras
Applied Math - Variational Calculus,
PDE

Data Analysis and Visualization -
Paraview, Mathematica
Operating Environments - Unix,
Windows

Scripting Languages - Bash, Awk

Professional Summary

Ph.D candidate in Material Science and Masters graduate in Computer Science, with a proven publication record and strong knowledge of statistical techniques and applied mathematics. Skilled in developing software for scientific computing and experienced in designing machine learning models.

Career Objective

Seeking an opportunity to grow as a research scientist in the areas of application of Artificial Intelligence towards Applied Sciences and Healthcare.

Publications

- Quantitative Analysis of Microstructure using a Two Stage Image Driven Machine Learning Approach - Arun Baskaran, Genevieve Kane et al., *Computational Material Science, Awaiting review of resubmission ; Draft of a manuscript shall be provided under request*
- Solute redistribution during grain growth within the regime of a closed system - Arun Baskaran, Catherine J Bishop et al., *Submitted to Modeling and Simulation in Material Science and Engineering; Preprint shall be provided upon request*
- Effect of initial variance of microstructures on grain growth under mean curvature - Arun Baskaran, David Crist, and Daniel J Lewis. *Modelling and Simulation in Materials Science and Engineering, 2017 Volume 25, Number 6*

Selected Conference Presentations

- Materials Science & Technology, OH, 2019
Phase field modeling of the influence of thermo-mechanical conditions on phase transformation in titanium alloys , Arun Baskaran and Daniel J Lewis
- 5th World Congress on Integrated Computational Materials Engineering, IL, 2019
Multiscale Modeling of Microstructural Evolution Induced by Thermomechanical Processing in Ti-6Al-4V Alloys , Arun Baskaran, Sagar Bhatt, Daniel Lewis, Antoinette Maniatty
- Numiform:International Conference on Numerical Methods in Industrial Forming Processes, NH, 2019
Numerical Modeling Of Ti-6Al-4V Microstructural Evolution For Thermomechanical Process Control, Sagar Bhatt, Arun Baskaran, Daniel Lewis, Antoinette Maniatty
- Fall Symposium, Center for Materials, Devices, and Integration Systems , NY, 2018
Image processing aided supervised learning to classify titanium alloy microstructures and segment dominant morphologies , Arun Baskaran
- Fall Symposium, Center for Materials, Devices, and Integration Systems , NY, 2018
Phase field method coupled with microelasticity theory to model microstructure evolution in Ti-6Al-4V alloys , Arun Baskaran & Daniel J Lewis
- The Eleventh International Symposium on Contact Angle, Wettability and Adhesion: StevenÅžs Institute, Hoboken, NJ, June 13-15, 2018.
A Framework to Study Heterogeneous Factors that Influence Grain Growth, D. Lewis and A. Baskaran
- Conference on Electronic and Advanced Materials, Jan, 2018, Orlando.
A Framework to Study Heterogeneous Factors that Influence Grain Growth, D. Lewis and A. Baskaran
- Materials Research Society(MRS) Fall conference, November 2016, Boston
Role of Grain Size Distribution and Solute Adsorption in determining the Kinetics of Grain Growth Å Arun Baskaran, Daniel J Lewis.

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Awards and Positions of Responsibility

- Reviewer, Full Paper Submissions and Extended Abstracts, Machine Learning for Health Workshop, NeurIPS 2019
- Reviewer, Full Paper Submissions, Machine Learning for Physical Sciences, NeurIPS 2019
- President, RPI Cricket Club. August 2017 - August 2018
- Awarded Best Poster in the ASM Materials Fall Symposium 2018, for the project, "Effect of initial variance of microstructures on grain growth under mean curvature"

Projects

- **Ph.D Thesis:** Developed a multi phase-field model to simulate solid-state phase transformation and microstructure evolution in titanium alloys, towards understanding its morphological origins. The thesis is funded by National Science Foundation, Grant No : Grant No : CMMI-1729336
- **Machine Learning for Quantitative Microstructure Analysis:** Implemented a CNN for a microstructure classification system to further direct label-specific feature extraction and image segmentation towards quantitative analysis of material structures.
- **Grain Growth in Graded Structures:** Implemented a thermodynamic model on Surface Evolver, an open source front tracking model, to analyse the effect of spatial gradient in a microstructure's grain size on its growth kinetics.
- **NearptD on IBM BG/Q:** Implemented NearptD, a nearest neighbor search algorithm with grid-based data structure, on the parallel platform of IBM's BG/Q using OpenMPI

Courses Undertaken

- **Computational Material Science:** Advanced Thermodynamics and Kinetics, Material Informatics and Data Science
- **Applied Mathematics:** Methods of Applied Mathematics, Non-linear Programming
- **Computer Science and Engineering:** Parallel Computing, Intro to AI, Learning from Data, Deep Learning, Analysis of Algorithms, Operating Systems

Work Experience

- **Teaching Assistant, Rensselaer Polytechnic Institute, Troy, NY**
August 2014-May 2016
Involved in the design and demonstration of experiments for various core courses in the undergraduate material science curriculum.
- **Undergraduate Summer Trainee, Tata Steel Limited, India**
May 2013 - July 2013
Computational alloy design of two-phase high strength steels using MatCalc. Subsequently, performed characterization experiments on the alloys.