

Raghav Gnanasambandam

PHD CANDIDATE · ISE

Virginia Tech, Blacksburg, VA

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Education

Virginia Tech

Blacksburg, VA

PHD IN INDUSTRIAL AND SYSTEMS ENGINEERING

Aug 2019 - May 2024 (expected)

- Manufacturing Systems Engineering Track
- Advisor: Dr. Zhenyu (James) Kong
- Thesis: "Bayesian and Physics Informed modeling and control of Metal Additive Manufacturing"

IIT Madras

Chennai, India

DUAL DEGREE (B.TECH & M.TECH) IN MECHANICAL ENGINEERING

Aug 2014 - May 2019

- Specialization: Intelligent Manufacturing
- Minor: Material Sciences
- Thesis: "Machine Vision Based Surface Characterization and Roughness Prediction of Machined Surfaces"

Awards & Honors

2022	Winner , INFORMS 17 th DMDA Workshop Poster Competition	\$ 500
2022	Finalist , INFORMS QSR Data Challenge	
2022	Winner , IISE QCRC-Process Miner Industrial Data Challenge	\$ 2,000
2022	Travel Awards , ISE at Virginia Tech	~ \$ 1,200
2022	Member , Graduate Academy for Teaching Excellence (GrATE), Virginia Tech	
2019-2020	Graduate Fellowship , ISE at Virginia Tech	
2014-2019	Undergraduate Scholarship , NLC India Ltd.	

Publications

PUBLISHED

Bo Shen, **Raghav Gnanasambandam**, Rongxuan Wang, Zhenyu (James) Kong. 2022. *Multi-task Gaussian process upper confidence bound for hyperparameter tuning and its application for simulation studies of additive manufacturing*. *IISE Transactions*, DOI: 10.1080/24725854.2022.2039813.

Akhil V, **Raghav Gnanasambandam**, N Arunachalam, DS Srinivas. 2020. *Image data-based surface texture characterization and prediction using machine learning approaches for additive manufacturing*. *Journal of Computing and Information Science in Engineering* 20 (2), 021010.

Akhil V, N Arunachalam, **Raghav Gnanasambandam**, DS Srinivas. 2020. *Surface texture characterization of selective laser melted Ti-6Al-4V components using fractal dimension and lacunarity analysis*. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*. November 2020. doi:10.1177/0954405420971081.

IN REVIEW

Raghav Gnanasambandam, Bo Shen, Andrew Chung Chee Law, Zhenyu (James) Kong. *Deep Gaussian Process Upper Confidence Bound for Optimizing Non-Stationary Functions and its Application in Additive Manufacturing*. *IISE Transactions*. 2022. First round of Revision.

Raghav Gnanasambandam, Bo Shen, Jihoon Chung, Xubo Yue, Zhenyu (James) Kong. *Self-scalable Tanh (Stan): Accelerated Convergence and Better Generalization of Physics-informed Neural Networks*. *IEEE TPAMI*. First Round of Revision

- **Winner** of IISE QCRC-Process Miner Industrial Data Challenge 2022.
- **Winner** of 17th INFORMS DMDA Workshop Poster Competition 2022.

Presentations

TALKS

October 2022. *Self-scalable Tanh (Stan): Faster Convergence and Better Generalization in Physics-informed Neural Networks*.
17th Data Mining and Decision Analytics Workshop, Indianapolis, IN.

October 2022. *Deep Gaussian Process Upper Confidence Bound for Optimizing Non-stationary Functions and Its Application in Additive Manufacturing*. **Invited Talk: INFORMS Annual Meeting, Indianapolis, IN.**

October 2022. *Physics-informed Machine Learning for Additive Manufacturing*. **Invited Talk: INFORMS Annual Meeting, Indianapolis, IN.**

May 2022. *Physics Informed Neural Networks for Additive Manufacturing*. **Invited Talk: IISE Annual Meeting, Seattle, WA.**

October 2021. *Bayesian Optimization for Additive Manufacturing*. **Invited talk: INFORMS Annual Meeting, Anaheim, CA.**

March 2019. *Automatic Gear Shifting Strategy*. **Invited Talk: AI in Manufacturing Course, IIT Madras, India.**

POSTERS

Self-scalable Tanh (Stan) activation for Physics-informed Neural Networks.

- October 2022, 17th DMDA Workshop, Indianapolis, IN. **(Winner)**
- October 2022, INFORMS QSR Poster Session, Indianapolis, IN.
- May 2022, IISE-QCRE Student Interaction and Poster Session, Seattle, WA.

Professional Experience

RF Wave Technologies Pvt. Ltd.

Chennai, India

SUMMER INTERN

2017

- Designed a sensor system for data logging and control of farm robot.
- Validated the mechanical design and conceptualized a power system for the robot.

IIT Madras & Prisms India Pvt. Ltd.

Chennai & Pondicherry, India

PROJECT

2017

- Automated the straightness measurement in an Autocollimator with a vision system.
- Designed the setup and developed a software UI to take automated readings.

Teaching Experience

Spring '21	ISE 3004 Industrial Cost Control, Graduate Teaching Assistant	Virginia Tech
Fall '19 & Fall '20	ISE 3214 Facilities & Logistics, Graduate Teaching Assistant	Virginia Tech
Spring '20	ISE 2214 Manufacturing Processes Lab, Lab Instructor	Virginia Tech
Spring '19	ME 2400 Measurement, Instrumentation and Control, Teaching Assistant	IIT Madras
Fall '18	ME 2050 Machine Drawing Practice, Lab Instructor	IIT Madras

Service

2022-2023	Graduate Student Ambassador, Graduate School	Virginia Tech
2022-2023	Mentor, Project EduAccess	India (Virtual)
2021-2022	Graduate Student Mentor, ISE Department	Virginia Tech
2022	Research Poster Judge, Undergraduate Poster Competition	Virginia Tech
2021	Student Volunteer, ISE Senior Symposium	Virginia Tech
2020-2021	Secretary, Society of Manufacturing Engineers	Virginia Tech

RELEVANT SKILLS

Python, R, MATLAB.

PROFESSIONAL MEMBERSHIPS

Institute of Industrial and Systems Engineers (IISE).

Institute for Operations Research and the Management Sciences (INFORMS).

PEER REVIEW

IEEE Transactions on Automation Science and Engineering