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BIOSKETCH

Dr. Ganesh Kumar Nithyanandam is an Indian academic and Industry 4.0 specialist with extensive experience in both U.S. automotive manufacturing and Indian higher education. After 15.5 years in the U.S. automotive sector, he joined PSG College of Technology as an Associate Professor in Mechanical Engineering, later becoming Program Manager for Graduate Studies at PSG Institute of Advanced Studies. He has led major projects including DRDO–ARDB and Indo–UK collaborations, established the Industry 4.0 Laboratory, and earned multiple patents in smart manufacturing. Recognized with the Indian Achievers Award, he continues contributing to digital manufacturing, engineering education, and innovation-driven curriculum development.

Educational Profile

- **Doctor of Philosophy (Ph.D.) in Mechanical Engineering**
Year of Passing: 2017
Thesis title: Investigation on precision machining for CNC milling machine at near minimum material zone
Thesis Supervisor: Dr. P. Radhakrishnan, Director, PSGIAS
- **Master of Certificate (MCert) in Project Management**
George Washington University, USA
- **Master of Science (MS) in Industrial and Systems Engineering**
Ohio University, Ohio, USA
- **Bachelor of Engineering (B.E.) in Production Engineering**
PSG College of Technology, Coimbatore
Project title: A CAD/CAM approach to manufacture core boxes for castings having doubly curved surfaces
Thesis Supervisor: Dr. P. Radhakrishnan, Assistant Professor, PSG College of Technology

Positions Held

Aug 2026 – Present Program Manager – Graduate Studies
PSG Institute of Advanced Studies

Adjunct Faculty – PSGIAS and PSGIM

Dec 2010 – Jun 2026	PSG IUCEE Program Coordinator Peelamedu, Coimbatore Associate Professor Department of Mechanical Engineering PSG College of Technology, Peelamedu, Coimbatore
Dec 2011 – June 2026	PG Program Coordinator for Northern Illinois University and University of Toledo PSG Institute of Advanced Studies, Peelamedu, Coimbatore
Jan 2015 – Jun 2026	Program Coordinator – PSGCT PSG CARE, Peelamedu, Coimbatore
Dec 2008 – May 2009	Director – Infrastructure Florida Cancer Specialist, Fort Meyers, FL, USA
Sep 1996 – Nov 2008	Project Manager Chrysler, Auburn Hills, MI, USA
Apr 1995 – Sep 1996	Sr. System Analysts National TechTeam, Dearborn, MI, USA (Client: Ford Motor Company, USA)
Dec 1993 – Mar 1995	System Analysts Computerized Facility Integration, Southfield, MI, USA (Client: General Motors, USA)
Sep 1991 – Jun 1993	Research Associate Department of Industrial and Systems Engineering Ohio University, USA
Jun 1990 – Jan 1991	Jr. Scientist Bhabha Atomic Research Centre Project PSG College of Technology, Peelamedu, Coimbatore Project Supervisor: Dr. P. Radhakrishnan

Research Areas

- Smart Manufacturing / Industry 4.0
- Augmented Reality
- Lean Six Sigma/ Lean Manufacturing
- Quality Engineering

Awards & Achievements

- Certified IGIP from Austria (2025) – Teaching Learning process certifications.
- Certified IUCEE IIECP (2024) – Teaching Learning process certifications.

- Certified Black Belt in Lean Six Sigma from Juran Academy (IND/BB/125).
- Recipient of 2024 Best Researcher Award.
- Recipient of 2022 Educationist Awardee for "Individual Achievements, Intellectual Property Rights, and Nation Building".
- Recipient of 2021 Rashtriya Shiksha Ratan Award.
- Recipient of 2020 National Achiever's Award.
- Train-the-Trainer certification on "Foundation Skills on Integrated Product Development" from NAACOM to teach this course to UG BE students.
- Train-the-Trainer certificate on "Pedagogies" from Cambridge University, UK.

Research Group



Setting Standards in Smart Manufacturing/Industry 4.0 - The Inspiring Saga of Ganesh Kumar Nithyanandam

Business Talkz Editor

Tamil Nadu: Ganesh Kumar Nithyanandam, an accomplished teacher in the Department of Mechanical Engineering at PSG College of Technology (PSGCT), is a paragon of innovation and expertise in Smart Manufacturing (also called Industry 4.0). His career is a remarkable blend of academic rigor, industrial acumen, and a steadfast pledge to indigenous innovation.

Championing Independent Innovation

A firm proponent of self-reliance, Ganesh Kumar Nithyanandam eschews dependence on foreign Original Equipment Manufacturers (OEMs), advocating for homegrown solutions that preserve intellectual sovereignty. His dedication to nurturing innovation within India has driven transformative advancements in research and innovation, setting a benchmark for future generations. A distinguished alumnus of

PSGCT, where he earned his Bachelor's in Production Engineering, then went on to complete three master's degrees in the United States with full scholarships. He later pursued a Ph.D. in Mechanical Engineering under the esteemed guidance of Dr. P. Radhakrishnan at Anna University, with his research sponsored by the Aeronautical Research and Development Board (ARDB) - DRDO India. This prolific academic journey yielded four patents in cyber-physical systems, a published book, and several book chapters.

Academic Leadership and Research Excellence

Nithyanandam has been at the forefront of bridging the gap between academia and industry. As the Principal Investigator for two significant projects, the ARDB-DRDO and an Indo-UK collaboration, he has pushed the boundaries of Industry 4.0 research. His work on developing an Indus-

try 4.0 curriculum gained global recognition, with a pivotal research paper ranked among Elsevier's top 10 for consecutive six months. Furthermore, the paper's alignment with United Nation's Sustainable Development Goals (SDGs) 9 and 17 underscores the societal relevance of his work. At PSGCT, Ganesh established two state-of-the-art laboratories: the Lean Manufacturing Lab (2011) and the Industry 4.0 Lab (2019). His groundbreaking transformation of a manually operated pump factory into a line-balanced, continuous-flow, six-stations assembly line, called as Testbed Demonstrator - the first of its kind in India. In other words, converted all the pivotal pump operations factory size from 1.5 acre into 60 feet x 30 ft. Implemented several smart manufacturing technologies such as digital twin, augmented reality (AR), virtual reality (VR), AI/ML, and

Industrial IoT and Consumer IoT on this Testbed Demonstrator.

Mentoring the Next Generation of Engineers

Ganesh Kumar Nithyanandam with a passion for empowering others has mentored over 100 faculty members through the IUCEE International Engineering Educator Certification Program (IEECP). His efforts have also enriched the academic and professional journeys of students, with four post-graduate projects winning accolades for excellence.

As a BLACK BELT-certified expert in Lean Six Sigma, Ganesh has trained more than 480 students for GREEN BELT certification, equipping them with vital problem-solving and process optimization skills. His ability to blend theoretical concepts with practical insights has established him as a sought-after mentor and educator.

Industry Experience

His career in the automotive industry spans 17 years, during which he held key positions at General Motors, Ford Motor Company, and Chrysler in the United States. From Business Process Analyst to Project Manager and Director, he earned accolades including one Gold, three Silver, and thirteen Bronze PQI awards. His exemplary contributions were recognized with an "Excellent" employee rating in 2008, evidence to his dedication and impact.

Awards and Accolades

Ganesh Kumar Nithyanandam's contributions have been widely acknowledged through numerous accolades:

- 2020 National Achiever's Award
- 2021 Rashtriya Shiksha Ratan Award
- 2022 Educationist Award for Individual Achievements, Intellectual Property Rights, and Nation Building



Dr Ganesh Kumar Nithyanandam

• 2024 Best Research Award (March 2024)

A Visionary for a Technologically Independent Future

Ganesh Kumar Nithyanandam exemplifies the spirit of innovation and resilience, blending academic excellence with practical ingenuity. His vow to develop indigenous solutions, advancing Industry 4.0 technologies,

and mentoring the next generation of engineers positions him as a transformative leader in the realm of mechanical engineering and smart manufacturing. His journey is an inspiring reminder of the transformative power of knowledge, perseverance, and an untiring belief in the potential of homegrown innovation.

Between **2020–2022**, you published **1** open access article with **Elsevier**. Your article was linked to the UN SDGs, helping to tackle some of the world's greatest challenges.

Your most recent open access article linked to the SDGs was:

Article	Sustainable Development Goal
1. "Digital literacy": Shaping industry 4.0 engineering curriculums via factory pilot-demonstrators	SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation SDG 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



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Date : 30 Dec 2022

PSG faculty honoured with “Best Educationist” award



Dr Ganesh Kumar Nithyanandam receives the award from the ministers.



The Covai Mail

Dr Ganesh Kumar Nithyanandam, faculty of PSG Institution received the “Best Educationist” award under the Theme “Individual Achievement, Intellectual Excellence & National Development” from Anil Agrawal, Member of the Parliament, Tirath Singh Rawat, Member of the Parliament and former Chief Minister of Uttarakhand and other ministers on at Constitutional Institute of India, New Delhi.

A few of his achievements include his participation as Principal Investigator of the DRDO-ARDO project inventing a new cyber-physical system device, Principal Investigator of the INDO-UK project, the 1st PSGCT faculty to receive

“Professional Level” certificate from the University of Cambridge (U.K.) for demonstrating 3 High Impact Teaching skills and Program Coordinator for various guest lectures, workshops & research programs of PSG Institutions.

Prior to academics, he worked in the U.S.A. for 16+ years at Florida Cancer Specialists (Fort Meyers, Florida), Chrysler (Detroit), Ford Motor Company (Detroit), and General Motors (Hamtramck, Detroit) - assuming various roles such as Director, Project Manager, Systems Manager, and Business Process Analysts.



COVID-19 IS NOT OVER; FOLLOW THE RULES !

Funded Projects

Funding Agency	Project Title	Amount	Duration	Role
Royal Academy of Engineering, UK	"Digital Literacy": shaping Industry 4.0 engineering curriculums via factory pilot-demonstrators	Rs. 32 lakhs	2 years (2019-21)	PI
ARDB-DRDO, India	Development of an adaptive control system for precision machining of aircraft aluminium alloys at 'near minimum material zone' with targeted mean	Rs. 18.85 lakhs	2 years (2016-18)	PI

Patents

S.No	Patent No	Country	Patent Type	Patent Title	Date Granted
1	14333512	USA	Utility	Portable Intelligent Controlling system for machines	May 15, 2018
2	315866	India	Design	Fixture holder for Computer Numerical Control machines	March 18, 2019
3	315867	India	Design	Workpiece Holder for Computer Numerical Control machines	March 18, 2019
4	334766	India	Utility	Apparatus for monitoring and Controlling Dimensional Variations in the machining process of the workpiece	May 16, 2020

Invited Talks

S. No.	Speaker	Title	National/ International	Organized by	Sponsored by	Session	Date
1	Dr. Ganesh Kumar Nithyanandam	Industry 4.0: Strategy and Issues	National	Combiatore Institute of Technology, India	AICTE-ISTE	1	January 6, 2022
2	Dr. Ganesh Kumar Nithyanandam	Awareness in Industry 4.0 Job opportunities	National	PSG College of Technology, India	Induction program for 1st year BE Mechanical Engg students	-	November 2, 2021
3	Dr. Ganesh Kumar Nithyanandam	Understanding Industrial IoT	National	PSG College of Technology, India	PSG College of Technology	-	March 8, 2021
4	Dr. Ganesh Kumar Nithyanandam	Operational Digital Twin for Discrete Industry	International	Binghampton University, USA	PSG-Binghampton	10	February 3, 2021
5	Dr. Ganesh Kumar Nithyanandam	Industry 4.0 for Beginners	National	PSG CARE, India	PSG CARE	-	January 23, 2021
6	Dr. Ganesh Kumar Nithyanandam	Operational Digital Twin in Discrete Industry - Case Studies	National	Mahendra Engineering College, India	AICTE-AQIS	-	January 20, 2021
7	Dr. Ganesh Kumar Nithyanandam	Implementation of Industry 4.0 solutions: Case Studies	International	DRDO, India	IT Defense in Manufacturing Conference	2	December 17, 2020

8	Dr. Ganesh Kumar Nithyanandam	A roadmap towards implementing Industry 4.0	National	Bhilai Institute of Technology, India	BITCON 2020 Conference	1	November 20, 2020
9	Dr. Ganesh Kumar Nithyanandam	Usage of 3D Printing in Industry 4.0	National	Sathyabama University, India	AICTE-ATAL	7	August 26, 2020
10	Dr. Ganesh Kumar Nithyanandam	Understanding Industry 4.0	National	PSG College of Technology, India	Indian Institute of Industrial Engineers Student's Chapter	-	January 21, 2020
11	Dr. Ganesh Kumar Nithyanandam	Overview of Smart Manufacturing Implementation - Case Study	National	PSG Institute of Technology & Applied Research, India	ISTE Student Convention 2019	3	December 19, 2019

Journal Publications

1. RR Chandran, **GK Nithyanandam**., Implementation of Just-in-Time Manufacturing Using 3D Printer, Digital Manufacturing: Proceedings of the AIMTDR 2023, 39-48, 2025.
2. **G Nithyanandam**, J Munguia, M Marimuthu. 'Digital literacy': Shaping industry 4.0 engineering curriculums via factory pilot-demonstrators, Advances in Industrial and Manufacturing Engineering 5, 100092, 2022.
3. **GK Nithyanandam**, J Munguia, M Marimuthu, R Rangasamy., Development of Industry 4.0 Curriculum Based on Industry-Academia Collaboration and Testbed Demonstrator Concept, Advances in Forming, Machining and Automation: Select Proceedings of AIMTDR, 2022.
4. **GK Nithyanandam**, PK Kothandaraman, J Munguia, M Marimuthu., Implementing Marked-Based Augmented Reality in Discrete industry-A Case Study, 2020 IEEE-HYDCON, 1-6, 2020.
5. **GK Nithyanandam**. A framework to improve the quality of teaching-learning process-A case study, Procedia computer science 172, 92-97, 2020.
6. **GK Nithyanandam**, SK Sellappan, S Ponnumuthu., A cyber-physical system improves the quality of machining in CNC milling machine—a case study, All India Manufacturing Technology, Design and Research conference, 421-429, 2018.
7. **GK Nithyanandam**, R Pezhinkattil., Investigation on precision machining for CNC Milling Machine at near minimum material zone, Proceedings of the AIMTDR 2017, Anna University, Chennai, 2017.
8. D Kumar, **GK Nithyanandam**., Investigation to improve the new product development process of mono block pump using additive manufacturing, International Journal of Mechanical and Production Engineering Research and Development, 2016.
9. **GK Nithyanandam**, R Pezhinkattil., An investigation to improve the performance of portable intelligent system in a distributed network, Int J Adv Engg Tech/Vol. VII/Issue II/April-June 375, 380, 2016.
10. **GK Nithyanandam**, R Pezhinkattil., Development of an adaptive control system to reduce components dimensional variations in milling, International Journal of Mechatronics and Manufacturing Systems 9 (1), 81-95, 2016.
11. G Sathishwaran, V Jose, **GK Nithyanandam**., Reduction of cycle time & defects of bogie frames in rail coach using lean principles, Advances in Natural and Applied Sciences 10 (10 SE), 31-44, 2016.
12. **N Ganesh Kumar**, Vignesh Ravichandran., Establishing control on consumables inventory in a pressure vessel manufacturing industry using Microsoft Excel (A Case Study), IJRET: International Journal of Research in Engineering and Technology 4, 2015.

13. **GK Nithyanandam**, M Franchetti, R Pezhinkattil., A New Technology to Achieve Precision Machining for CNC Machines Using Artificial Neural Network, International MATADOR Conference, 369-388, 2015.
14. V Ravichandran, **NG Kumar**., Implementation of Kanban System for Inventory Tracking and Establishing Pull Production, International Journal of Advance in Production and Mechanical Engineering, 2015.
15. **GK Nithyanandam**, M Raju, G Srinivasan., Defects reduction in steering gear product using Six Sigma Methodology, Applied Mechanics and Materials 598, 647-651, 2014.
16. **GK Nithyanandam**, S Senthamizh, P Selvaraj, P Radhakrishnan., Optimization of cutting parameters of CNC milling for aircraft components using design of experiments, Applied Mechanics and Materials 598, 164-168, 2014.
17. **GK Nithyanandam**, R Pezhinkattil., A Six Sigma approach for precision machining in milling, Procedia Engineering 97, 1474-1488, 2014.
18. **GK Nithyanandam**, M Franchetti, R Pezhinkattil., Near Minimum Material Zone: A New Concept to Reduce the Weight of the Aircraft Components in Machining Using Lean Six Sigma Methodology, ASME International Mechanical Engineering Congress and Exposition 56192, 2013.
19. **Ganesh Kumar N.**, A case study on quality of setting up engineering question papers, International Journal of Educational Science and Research (IJESR) 3, 2013.
20. S Naveen, **GK Nithyanandam**., Quality improvements by implementing lean manufacturing principles, Advanced Materials Research 488, 1168-1173, 2012.
21. AJ Raj, **GK Nithyanandam**, S Jayaraj., Airline Revenue Management: Optimization Using Origin-Destination Strategy Controlled by Nested Heuristics, Applied Mechanics and Materials 229, 2775-2778, 2012.

Total Number of Conference Papers/Proceedings: 21