Dr. S. Denis Ashok

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EDUCATIONAL QUALIFICATIONS

- **Doctor of Philosophy** in Mechanical Engineering
  Thesis Title**:** Modeling, measurement and analysis of spindle radial errors in miniaturized machine tools
  Place of Study: Indian Institute of Technology (IIT) Madras, Chennai, Tamil Nadu, India.
  Guide: Dr.G.L.Samuel, Professor, Department of Mechanical Engineering, IIT Madras, Tamil Nadu, India.
  Year of completion: 2011

- **Master of Engineering** in Production Engineering, First class with Distinction
  Thesis Title**:** Camera Calibration Techniques for machine vision systems
  Place of Study: Thiagarajar College of Engineering, Madurai. Tamil Nadu, India.
  Year of completion: 2003

- **Bachelor of Engineering** in Mechanical Engineering, First class
  Place of Study: K.L.N. College of Engineering and Technology, Madurai. Tamil Nadu, India.
  Year of completion: 1998

AREAS OF RESEARCH

- Soft Computing, Artificial intelligence techniques
- Machine vision and Image processing techniques
- Control of Automotive and Mechatronics systems

ACHEIVEMENTS AND AWARDS

- Received fellowship and funding for developing a mine detection robot project under “Teachers Associateship for Research Excellence” (TARE) scheme from SERB during Nov 2018-Nov 2021.
- Received funding under “Scheme for Young scientist and Technologist Scheme (SYST)” from DST for developing a hybrid human powered vehicle during July 2015-2017.
- Received the “Innovation and Leadership award”, for the contribution of development of first indigenous development of egg vending machine, from Central Poultry Development Organization, Chandigarh, India on 12 October 2013.
- Received funding under “Scheme for Fast Track Young Scientist” from DST for developing machine vision system for spindle error evaluation during July 2012-2015.
- Qualified in GATE 2005 with 88.54 Percentile in Production and Industrial Engineering.
- Achieved Second Rank in M.E Production Engineering at Thiagarajar College of Engg, Madurai.

INTERNATIONAL COLLABORATIVE PROJECTS

- Received an Industry-academia partnership Fund from The Royal Academy of Engineering, U.K to collaborate with Loughborough University and Valeo, Chennai for Design and development of a four-wheeled electric vehicle for research, teaching and outreach in Tamil Nadu, India under Industry Academia Partnership Programme during 2018-19.
- Received a grant of SEK 750,000 from STINT (The Swedish Foundation for International Cooperation in Research and Higher education) for initiating a double degree program on M.Sc. "Manufacturing" and M.Sc. "Robotics" with University West, Sweden during Oct 2015-Nov 2018.

GOVERNMENT SPONSORED RESEARCH PROJECTS

- **"Development of novel deep learning, visual servoing approaches for anti-tank mine detection using thermal vision assisted mobile robot"**
  - Role : Principal Investigator Cost: Rs.18,30,000/-
  - Funding Agency: DST, New Delhi Duration: 3 years (Nov 2018- Nov 2021)
- "**Development of a human powered vehicle for sustainable rural and urban transportation"**
  - Role : Principal Investigator Cost: Rs.9,43,098/-
  - Funding Agency: DST, New Delhi Duration: 1.5 years (July 2015- Dec 2016)
- "**Development of machine vision approach for evaluating spindle radial errors of a machine tool**".
  - Role : Principal Investigator Cost: Rs.16,60,000/-
  - Funding Agency: DST, New Delhi Duration: 3 years (June 2013-June 2016)
- **"Development of Egg Vending Machine"**
  - Role : Principal Investigator Cost: Rs.68,200/-
  - Funding agency : CPDO, Chandigarh Duration: 5 months (March 2013-Aug 2013)

INDUSTRY SPONSPRED CONSULTANCY PROJECTS

- **"Development of wire extruder for 3D printing applications"**
  - Role : Principal Investigator Cost: Rs. 4,74,444
  - Company: Euro Exim Duration: 6 months (June 2019- Dec 2019)
- **"Development of Innovative Techniques for cabin noise reduction in HVAC System"**
  - Role : Co-Principal Investigator Cost: Rs. 4,02,800.00
  - Company: Valeo, Chennai Duration: 6 months (June 2019- Dec 2019)
- **"Machine vision sorting technique and multi extrusion mechanism for batti manufacturing"**
  - Role : Principal Investigator Cost: Rs.9,43,000/-
  - Company : ITC, Chennai Duration: 6 months (Nov 2018- March 2019)
- **"Household electrical appliances control using mobile phones"**
  - Role : Principal Investigator Cost: Rs.6,00,000/-
  - Company: Tata power Company, Mumbai Duration: 12 months (Nov 2013-Nov 2015)

ONGOING DOCTORAL RESEARCH WORKS

- Development of artificial intelligent techniques for vision based control of robotic manipulator
  (Scholar Name: M. Praveen Kumar)
- Development of artificial intelligent techniques for a pipe inspection robot.
  (Scholar Name: Ms. Nagapriya)
- Development of artificial intelligent techniques for control of an electro hydraulic system
  (Scholar Name: S. Ramesh)
- Development of soft robotic manipulator for precise handling of objects of varying shapes
  (Scholar Name: M. Thileepan)
- Development of Cyber Physical System modeling approach for monitoring rolling element bearings.
  (Scholar Name: M. Sandesh)

ONGOING DOCTORAL RESEARCH WORKS

- Development of new control strategies for improving yaw stability control using active front steering of a vehicle
  (Scholar Name: S. KRISHNA)
- A Machine vision Approach and image processing techniques for Spindle Radial Error Evaluation in machine tools
  (Scholar Name : C. KAVITHA)
- Development of control approaches for Electronic Throttle Control in a Motorcycle Engine
  (Scholar Name B. ASHOK)
- Development of fuzzy logic and neural network techniques for the generation of road feel in a steer by wire system
  (Scholar Name R.JAYACHANDRAN)
- Investigations on monitoring approaches for friction stir welding of aluminum alloy AA6063-T6
  (Scholar Name S. SENTHIL KUMAR)

PROFESSIONAL MEMBERSHIP

- Life member-Soft Computing Research Society, India
- Associate Editor of Engineering Journal (http://engj.org/)

RESEARCH PUBLICATIONS-INTERNATIONAL JOURNALS

1. Kavitha C, **Ashok SD**. A New Approach to Spindle Radial Error Evaluation Using a Machine Vision System. Metrology and Measurement Systems. 2017 Mar 1;24(1):201-19.
2. Manish R, **Ashok SD.** Energy-Efficient Illumination Control Using Image Parameters in a Machine Vision Environment for Optimum Surface Texture Identification. InAdvances in Systems, Control and Automation 2018 (pp. 165-179). Springer, Singapore.
3. Ramesh S, **Ashok SD**, Naulakha NK, Adithyakumar CR, Reddy ML, Reddy SK. Energy Efficient Hydraulic Clamping System using Variable Frequency Drive in a CNC Machine. InIOP Conference Series: Materials Science and Engineering 2018 Jun (Vol. 376, No. 1, p. 012124). IOP Publishing.
4. Kavitha C, Shankar SA, Ashok B, **Ashok SD**, Ahmed H, Kaisan MU. Adaptive suspension strategy for a double wishbone suspension through camber and toe optimization. Engineering science and technology, an international journal. 2018 Feb 1;21(1):149-58.
5. Ramesh S, **Ashok SD,** Nagaraj S, Reddy ML, Naulakha NK, Adithyakumar CR. Energy conservation strategy in Hydraulic Power Packs using Variable Frequency Drive IOP Conference Series: Materials Science and Engineering. InIOP Conference Series: Materials Science and Engineering 2018 Feb (Vol. 310, No. 1, p. 012041). IOP Publishing.
6. Ramesh S, **Ashok SD**, Nagaraj S, Adithyakumar CR, Reddy ML, Naulakha NK. Design of An Energy Efficient Hydraulic Regenerative circuit. InIOP Conference Series: Materials Science and Engineering 2018 Feb (Vol. 310, No. 1, p. 012042). IOP Publishing.
7. Banerjee N, Kumar A, Mohan N, Ashok B, Kavitha C, **Ashok SD.** Estimation of position of electromechanical actuator valve using Kalman filter. InPower and Advanced Computing Technologies (i-PACT), 2017 Innovations in 2017 Apr 21 (pp. 1-6). IEEE.
8. Kavitha C, Shankar SA, Karthika K, Ashok B, **Ashok SD.** Active camber and toe control strategy for the double wishbone suspension system. Journal of King Saud University-Engineering Sciences. 2018 Jan 31.
9. Ramesh S, **Ashok SD,** Nagaraj S, Adithyakumar CR, Reddy ML, Naulakha NK. Design of An Energy Efficient Hydraulic Regenerative circuit. InIOP Conference Series: Materials Science and Engineering 2018 Feb (Vol. 310, No. 1, p. 012042). IOP Publishing.
10. Kavitha C, Shankar SA, Ashok B, **Ashok SD,** Ahmed H, Kaisan MU. Adaptive suspension strategy for a double wishbone suspension through camber and toe optimization. Engineering science and technology, an international journal. 2018 Feb 1;21(1):149-58.

11. B Ashok, **S Denis Ashok**, C Ramesh Kumar, Trends and future perspectives of electronic throttle control system in a spark ignition engine, Annual Reviews in Control, Volume 44, 2017, Pages 97-115.
12. K Nantha Gopal, B Ashok, K Senthil Kumar, R Thundil Karuppa Raj, **S Denis Ashok**, Vignesh Varatharajan, Vivek Anand, Performance analysis and emissions profile of cottonseed oil biodiesel–ethanol blends in a CI engine, Pages 1-8 , Journal of Bio fuels, 2017
13. Kanish T C, Narayanan S, Kuppan P , **Denis Ashok S (2017)** Investigations on the finishing forces in Magnetic Field Assisted Abrasive Finishing of SS316L, Procedia Engineering 174 (2017) 611 – 620
14. Ashok B., **Denis Ashok S**., Ramesh Kumar C. **(2017)** An Integrated Pedal Follower and Torque Based Approach for Electronic Throttle Control in a Motorcycle Engine, Engineering Journal, Vol.21, No:1, ISSN:0125-8281
15. R.Jayachandran, **S.Denis Ashok (2016)** Neural network based approach for the generation of road feel in a steer by wire system, Engineering Journal, Vol.20, No:5, ISSN:0125-8281
16. B Ashok, **S Denis Ashok,** C Ramesh Kumar (2016) A review on control system architecture of a SI engine management system, Annual Reviews in Control, Vol.41, 94-118.
17. Abhijith, V., Antony Richard, M., Ravi, R., **Denis, Ashok, S**., Ashok, M. **(2015).** Fuzzy Logic Based Fuel Flow Control System in a Dual-Fuel Diesel Engine. Indian Journal of Science and Technology, Vol.8 (S2), 96-100
18. B. Ashok, **S. Denis Ashok,** C. Ramesh Kumar **(2015)** LPG diesel dual fuel engine – A critical review, Alexandria Engineering journal, Volume 54, Issue 2, June 2015, Pages 105–126
19. S. Krishna, S. Narayanan, **S. Denis Ashok (2014)** Fuzzy logic based yaw stability control for active front steering of a vehicle, Journal of Mechanical Science and Technology, December 2014, Volume 28, Issue 12, pp 5169-5174.
20. T.C. Kanish, P. Kuppan, S. Narayanan and S.Denis Ashok **(2015)**, Experimental investigations and parametric analysis of magnetic field assisted abrasive finishing of SS316L, *International. Journal of. Manufacturing Technology and Management, Vol. 29, Nos. 1/2, 2014, 78-95.*
21. Narrendar.R.C, **S.Denis Ashok (2014)** Dynamic Modelling and Obstacle Avoidance for Cable Maneuvering Robot - In application to Transmission line Inspection robots, International Journal of Engineering Development and Research , ISSN:2321-9939, Vol.2, Issue 4, pp.3372-3376, Dec 2014

22. S. Senthil Kumar, **S. Denis Ashok (2014)** Development of Acoustic Emission and Motor Current Based Fuzzy Logic Model for Monitoring Weld Strength and Nugget Hardness of FSW Joints Procedia Engineering, Proceedings of 12th Global congress on manufacturing and management, Volume 97, 2014, Pages 909–917.
23. Kanish T.C., Kuppan P, Narayanan S, **Denis Ashok S (2014)** A Fuzzy Logic based Model to predict the improvement in surface roughness in Magnetic Field Assisted Abrasive Finishing, Procedia Engineering, Proceedings of 12th Global congress on manufacturing and management, Vol. 97, pp. 1948 – 1956.
24. **Denis Ashok, S.** Narayanan, S and Krishna S, **(2014)** Control of Yaw stability using fuzzy logic based yaw stability controller", *International Journal of Vehicular Technology*, Volume 2014.
25. Kavitha.C, **Denis Ashok (2013)** Edge Detection of Images Using Fuzzy Logic Technique, *International Journal of Applied Engineering Research*, Vol.8, No, 19
26. Senthilkumar Subramaniam, Narayanan S and **Denis Ashok S**, **(2013)** Acoustic emission–based monitoring approach for friction stir welding of aluminum alloy AA6063-T6 with different tool pin profiles, *Proc IMechE Part B: J Engineering Manufacture,* 227(3) 407–416.
27. R.Jayachandran, **S.Denis Ashok,** and S.Narayanan **(2013)** Fuzzy Logic based Modelling and Simulation Approach for The estimation of Tire Forces, Proceedings of *International Conference on design and manufacturing, IConDM 2013, Procedia Engineering*, Volume 64, 1109-1118.
28. S. Senthil Kumar, **S. Denis Ashok**, and S. Narayanan**, (2013)** Investigation of Friction Stir Butt Welded Aluminium Alloy Flat Plates using Spindle Motor Current Monitoring Method, Proceedings of *International Conference On design and manufacturing, IConDM 2013, Procedia Engineering*, Volume 64, 915-925
29. **Denis Ashok, S.** and Samuel, G. L**. (2012)** Harmonic analysis based method for separation of form error during evaluation of high speed spindle radial errors, *Proceedings of Institution of Mechanical Engineers, Part B : Journal of Engineering Manufacture*, *May 2012 vol. 226 No. 5 837-852*
30. **Denis Ashok, S.** and Samuel, G. L. **(2012)** Modeling, Measurement and evaluation of spindle radial errors in a miniaturized machine tool, *International Journal of Advanced Manufacturing Technology*, Vol.59, Issue.5, pp.445-461.
31. Anabik shome and **S.Denis Ashok**, **(2012)** Fuzzy logic approach for boiler temperature & water level control, *International Journal of Scientific & Engineering Research*, Volume 3, Issue 6, ISSN 2229-5518.
32. **Denis Ashok, S.** and Samuel, G. L. **(2011)** Least square curve fitting technique for processing time sampled spindle measurement data, *International Journal of Manufacturing Research,* Vol. 6, Issue 3, pp. 256-276.
33. **Denis Ashok, S.** and Samuel, G. L. **(2010)** Kinematic modeling and simulation of spindle errors in a miniaturized machine tool, *Journal of Manufacturing Engineering*, Vol. 5, Issue 3, pp. 183-189.
34. **Denis Ashok, S.** and Samuel, G. L. **(2010)** Regression method for identifying spindle radial errors of a miniaturized machine tool, *Journal of Studies on Manufacturing*, Vol.1, pp. 26-33.

BOOK CHAPTERS

- **G.L. Samuel, S. Denis Ashok** (2012) Measurement and Evaluation of asynchronous radial error of a high speed spindle, Advanced Mathematical and Computational Tools in Metrology and Testing, Vol.9 (F Pavese, M Bär, J-R Filtz, A B Forbes, L Pendrill, H. Shirono, eds.), Series on Advances in Mathematics for Applied Sciences, Vol. 84, World Scientific, Singapore, 350-358.

- **S. Denis Ashok, R. Manish** (2018) Energy-Efficient Illumination Control Using Image Parameters in a Machine Vision Environment for Optimum Surface Texture Identification, Advances in Systems, Control and Automation: ETAEERE-2016, edited by Avinash Konkani, Rabindranath Bera, Samrat Paul, Springer, Singapore.