Bonda Atchuta Ganesh Yuva Raju

Personal Data

Place and Date of Birth:	Gajuwaka, Andhra Pradesh | 22 July 1991
Address:	H. No. 1-46, Kalapaka, Paravada, Visakhapatnam, Andhra Pradesh, PIN Code: 531 021, India.
Phone:	(+91) 8338849852 / 8499840048
email:	bagyuvaraju@gmail.com

Education

Jan 2022 Doctor of Philosophy in Mechanical Engineering
National Institute of Technology, Rourkela
Thesis:"Signal Analysis and Chatter Control Studies in Internal Turning Operations" | Supervisors: Dr. B.K. Nanda and Dr. J. Srinivas
CGPA: 9.46 **(Awarded)**

Jun 2015 Master of Technology in Mechanical Engineering
National Institute of Technology, Rourkela
Thesis: "Experimental Investigation and Numerical Analysis of Combined Extrusion-Forging Process" | Supervisor: Dr. Susanta Kumar Sahoo
CGPA: 9.23

May 2012 Bachelor of Technology in Mechanical Engineering
JNTUK University College of Engineering, Vizianagaram
Thesis:"Energy Audit of Walking Beam Reheating Furnace in Steel Industry"
Percentage: 74.71% **(Distinction)**

Apr 2008 Intermediate in Science and Maths
BIEAP, **Alfa Junior College**, Ukkunagaram
Percentage: 90.60%

May 2006 Matriculation (SSC)
BSEAP, **Vishaka Vimala Vidyalayam**, Ukkunagaram
Percentage: 82.33%

Skills

Programming:	Basics of C, OOP with C++ and LaTeX
Software:	SolidWorks, DEFORM-3D, Design Expert, MATLAB, LabVIEW, Origin
Languages:	English (Professional), Telugu (Native), Hindi (Professional)
Soft skills:	Self-Motivation, Team work, Leadership, Time-Management and Adaptability.

Research Interests

- **Machine Tool Dynamics:** Machine Tools, Cutting Tools, Machining Dynamics, Tool Condition Monitoring and Control of Machine Tool Vibration.
- **Digital Manufacturing:** Intelligent Machine Tools, Smart Machining and Digital Twin.

Research Experience

Jul 2015 - Dec 2021 **Doctoral Student**, Lab of Dr. B.K. Nanda and Dr. J. Srinivas

Onset Chatter in Internal Turning Operations

- A nonlinear friction induced regenerative chatter model with process damping was established using a novel friction model for two degree of freedom internal turning system.
- A natural parameter continuation scheme with Newton Raphson corrector approach was used to construct the more accurate stability boundaries.
- Nonlinear behaviour of cutting tool was investigated considering primary and internal resonance conditions. Cutting experiments were performed to validate the analytical work.
- Vibration signal based analysis was carried out using advanced signal processing techniques and neural network classification algorithms to identify/classify the presence of chatter.
- The use of nanocomposites as damping layer materials on tool surfaces (constrained layer damping (CLD) treatments) was investigated both analytically and experimentally.
- A hybrid passive-active boring tool with CLD having piezoelectric surface patches for control force actuation was developed and investigated numerically.
- Overall in this research, an effective model was proposed, validated with cutting experiments and identified chatter successfully controlled via hybrid controller.

Jul 2014 - May 2015 **Postgraduate Student**, Lab of Dr. S.K. Sahoo

Combined Extrusion Forging Process

- This research work focuses on estimating forming load to produce the product collet chuck holder by this process.
- The metal flow pattern and die cavity filling have been studied in experimental and simulation analyses.
- The modelling software SolidWorks was used for 3D modelling and Deform3D© is used for the simulation process.
- The number of experiments have been performed to compare the results obtained from the simulation process.
- Overall, a double collar collet chuck holder was designed. The extrusion-forging process was simulated to obtain the flow patterns and forming loads and validate the results with several experiments.

Teaching Experience

Jan 2016 - Dec 2019 **Teaching Assistant** at *National Institute of Technology, Rourkela*

Subjects Handled:

- Production Technology (Theory)
- Computer Aided Design and Graphics (Theory)
- Neural Network and Artificial Intelligence (Theory)
- Machine Drawing and Solid Modelling (Practical)
- CAD laboratory (Practical)
- Soft Computing Laboratory (Practical)
- Non-Conventional Machining Laboratory (Practical)

Fellowships and Certificates

Fellowships

Jul 2015 - Jun 2020 **Doctoral fellowship** from Ministry of Human Resource Development, MHRD, Government of India.

Jul 2013 - May 2015 **Postgraduate fellowship** from Ministry of Human Resource Development, MHRD, Government of India.

Certificates

Mar 2013 **Graduate Aptitude Test in Engineering (GATE)** Score: 575, All India Rank: 3482.

Mar 2012 **Graduate Aptitude Test in Engineering (GATE)** Score: 395, All India Rank: 8926.

Achievements

Mar 2019	**Best Presenter Award**	*Winner*
	Awarded at International Conference on Recent Developments in Mechanical Engineering (ICRDME), S. A. Engineering College, Thiruverkadu, Chennai, India	
Jan 2019	**Best Paper Award**	*Winner*
	Awarded at International Conference on Recent Advances in Materials, Manufacturing and Energy Systems (ICRAMMES), VRSEC, Vijayawada, India.	
Nov 2011	**Robo-Wrestling**	*Winner*
	Earned at Yuvtarang, an eco-friendly national youth festival conducted by Vignan's Engineering and Pharmacy, Visakhapatnam.	
Aug 2011	**Robotics (Autobhan)**	*Runner*
	Earned at SURGE-2KX, A National Level Technical Symposium conducted by MVGR College of Engineering, Vizianagaram.	

Extracurricular Activities

Feb 2012	**Student Coordinator** at Mechano2
	A National level technical symposium organized by department of mechanical engineering, JNTUK UCE Vizianagaram.
Mar 2011	**Volunteer** at Mechano-MMXI
	A National level technical symposium organized by department of mechanical engineering, JNTUK UCE Vizianagaram.
Feb 2009	**Volunteer** at Advanced materials and processing workshop
	A National workshop organized by department of mechanical engineering, JNTUK UCE Vizianagaram.

Workshops/Short-Term Couses/FDP Participation

Feb 2022	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Industrial Automation using PLC Programming" organized by the MSME Technology Centre, Ludhiana (Central Tool Room, Ludhiana).
Jan 2022	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Smart Manufacturing - Scope and Challenges in Research" organized by North Eastern Regional Institute of Science and Technology, Nirjuli.
Dec 2021	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Machine Learning Applications in Mechanical Engineering" organized by Acropolis Institute of Technology and Research, Madhya Pradesh.
Dec 2021	An Online Faculty Development Programme on "Internet of Things" organized by Electronics & ICT Academy, IIT Guwahati in association with St. Vincent Pallotti College of Engineering and Technology (SVPCET) and support from UniConverge Technologies Pvt. Ltd.
Nov 2021	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Artificial Intelligence and Machine Learning" organized by Veer Surendra Sai University of Technology Burla, Odisha.
Jun 2021	One week online faculty development programme on "Advanced Control Strategies: Design and Applications" (ACSDA-2021) organized by Rajkiya Engineering College Sonbhadra and sponsored by FET, AKTU Lucknow.
Jun 2019	A five day short term course on "Modern Vibration Principles for Engineering" (MVPE-2019) organized by department of mechanical engineering, NIT Rourkela.
Feb 2019	Global Initiative for Academic Networks (GIAN) course on "Vibration Problems in Rotating Machines: Diagnosis and Rectification" organized by Department of Industrial Design, NIT Rourkela.
Dec 2018	Pre-conference workshop on "Scanning Electron Microscopy" conducted by department of metallurgical and materials engineering, NIT Rourkela.

Oct 2018	Global Initiative for Academic Networks (GIAN) course on "Structural Dynamics: Analysis and Control" organized by Department of Civil engineering, NIT Rourkela.
Jul 2018	National Conference on recent Developments in Mechanical Engineering (NCRDME-2018) organized by Department of Mechanical Engineering, NIT Rourkela.
Sep 2015	National Instruments workshop on Lab View & Hardware Interfacing conducted by department of electrical engineering, NIT Rourkela.
Mar 2012	Project based training on "Energy audit of walking beam furnace in LMMM" at Light and Medium Merchant Mill Department, Visakhapatnam Steel Plant.
Jun 2011	Project based training on "A study on Hydraulic systems of Rolling Mills" at Light and Medium Merchant Mill Department, Visakhapatnam Steel Plant.

Presentations

Mar 2019	Analytical and Finite Element Modelling of the Boring bar for Stability Studies in International Conference on Recent Developments in Mechanical Engineering (ICRDME), SAEC, Poonamallee, Chennai, India. **(Oral)**
Mar 2019	Stability studies of deep boring operation using viscoelastic damping in National Conference on Advancements in Materials, Design & Manufacturing Methods (AMDMM-2019), NIT Rourkela, Odisha, India. **(Oral)**
Jan 2019	Prediction and Optimization of surface roughness and vibration amplitudes in deep boring operation of mild steel in International Conference on Recent Advances in Materials, Manufacturing and Energy Systems (ICRAMMES), VRSEC, Vijayawada, India. **(Oral)**
Dec 2017	Static analysis of composite boring bar using FEA in International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM), IIT, Kharagpur, India. **(Oral)**
Dec 2017	Vibration attenuation in boring operation using fiber reinforced composites in International Conference on Precision, Meso, Micro and Nano Engineering (COPEN 2017), IIT, Madras, India. **(Oral)**
Mar 2017	Prediction of Vibration Amplitude and Surface Roughness in Boring Operation by Response Surface Methodology in International Conference on Emerging Trends in Materials and Manufacturing Engineering (IMME17), NIT, Tiruchirapalli, India. **(Oral)**
Mar 2015	Experimental and Finite Element Analysis of Combined Extrusion-Forging Process in International conference on Applied Engineering, Science & Technology (ICAEsT-15), MIET, Madurai, India. **(Oral)**
Apr 2019	Analysis of Regenerative Chatter in Boring of EN Steels and Passive Controller Implementation in Research Scholars' week, NIT Rourkela, Odisha. **(Poster)**

Research Publications (ORCID ID: 0000-0002-2960-8824)

Journal Papers/Articles

1. **Bonda, A.G.Y.**, Nanda, B.K. and Jonnalagadda, S., 2020. Vibration signature based stability studies in internal turning with a wavelet denoising preprocessor. *Measurement*, 154, p.107520. DOI: 10.1016/j.measurement.2020.107520 **(SCIE, Impact Factor:3.927)**
2. **Yuvaraju, B.A.G.**, Nanda, B.K. and Srinivas, J., 2021. Optimal cutting state predictions in internal turning operation with nano-SiC/GFRE composite layered boring tools. *International Journal of Machining and Machinability of Materials*, 23(1), pp.1-20.

   DOI: 10.1504/IJMMM.2021.112714 **(Scopus, Cite Score:3)**
3. **Yuvaraju, B.A.G.**, Nanda, B.K. and Srinivas, J., 2021. Investigation of stability in internal turning using a boring bar with a passive constrained layer damping. *FME Transactions*, 49(2), pp.384-394. DOI: 10.5937/fme2102384Y **(ESCI/Scopus, Cite Score:2.7)**

4. **Yuvaraju B.A.G.**, Nanda, B.K. and Srinivas, J., Nonlinear dynamics of friction-induced regenerative chatter in internal turning with process damping forces, **(Under Review)**
5. **Yuvaraju B.A.G.**, and Srinivas, J., "Feature Extraction and Chatter identification in Internal Turning using adaptive wavelet threshold de-noising based ICEEMDAN-HT fusion. **(Under Review)**

Conference Proceedings

6. **Yuvaraju, B.A.G.**, Nanda, B.K. and Srinivas, J., 2019. "Analytical and Finite Element Modelling of the Boring bar for Stability Studies". In Proceedings of International Conference on Recent Developments in Mechanical Engineering, ICRDME - 2019, p. 61.
7. **Yuvaraju, B.A.G.**, Nanda, B.K. and Srinivas, J., 2019. "Prediction and Optimization of surface roughness and vibration amplitudes in deep boring operation of mild steel". In Proceedings of International Conference on Recent Advances in Materials, Manufacturing and Energy Systems, ICRAMMES - 2019, p. 58.
8. **Yuvaraju, B.A.G.** and Nanda, B.K., 2018. Prediction of vibration amplitude and surface roughness in boring operation by response surface methodology. Materials Today: Proceedings, 5(2), pp.6906-6915. DOI: 10.1016/j.matpr.2017.11.352. **(Scopus)**
9. **Yuvaraju, B.A.G.** and Nanda, B.K., 2017. "Vibration attenuation in boring operation using fiber reinforced composites". In Proceedings of 10th International Conference on Precision, Meso, Micro and Nano Engineering, COPEN - 10, pp. 919-924.
10. **Yuvaraju, B.A.G.** and Nanda, B.K., 2017. "Static analysis of composite boring bar using FEA". In Proceedings of International Conference on Theoretical, Applied, Computational and Experimental Mechanics, ICTACEM - 2017, p. 5.
11. Srikar, P., **Bonda, A.G.Y.** and Sahoo, S. K., 2015. "Experimental and Finite Element Analysis of Combined Extrusion-Forging Process". In Proceedings of International conference on Applied Engineering, Science Technology, ICAEsT - 15, pp. 80-84.

Contact References

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Declaration

I hereby declare that the above mentioned particulars are furnished by me and are true to the best of my knowledge.

Place: Visakhapatnam
Date: April 12, 2022

Signature
Bonda Atchuta Ganesh Yuva Raju