

Gowtham Venkatraman
Mechanical Engineering (Ph.D.)

Peoria, IL 61615
(614) 940-0786
venkatraman.14@osu.edu
<https://www.linkedin.com/in/venkatraman-g>

SUMMARY

- 6+ years of experience in process control, instrumentation, and additive manufacturing (AM).
- Solid team-player with experience spearheading cross-functional projects. Initiated two interdisciplinary collaborations to predict process-property relationships for ultrasonic AM (UAM).
- Proficient in writing technical reports, research communications, and grant proposals, securing over \$100k funding from NSF and industry partners. Strong communication and presentation skills.

PROFESSIONAL EXPERIENCE

Sr. Systems Engineer, Caterpillar, Peoria, Illinois [Apr 2022– present]

- *Methods:* CAN/LIN Network Analysis, ECU Circuit Analysis, GUI Design, Gap Analysis.
- Lead deployment of new sensing technologies and novel electronics for excavator applications.
- Coordinate with suppliers and internal teams for product development to meet production timelines.

Graduate Research Associate, UAM Laboratory, The Ohio State University [Jan 2018 – Jan 2022]

- *Methods:* Impedance analysis, Elastoplastic / Thermal FEA, EBSD, Nanoindentation, Shear testing.
- Identified threshold parameters for UAM welding of aluminum by correlating weld parameters with the interface grain boundary energy estimated by analyzing raw SEM data.
- Responsible for preventive maintenance, SOP design, and troubleshooting for research-grade tool.
- Built a tool to design weld parameters to embed temperature-sensitive PVDF sensors and electronics in AM parts by initiating collaborations with two OSU material science groups.
- Developed a parameter-selection tool to optimize UAM welding of multi-material structures

Intern, Honda R&D Americas, Columbus, Ohio [May 2021– Aug 2021]

- *Methods:* Explicit structural simulations (LS-DYNA), Structural testing (UTM), Failure modeling.
- Reduced computation time of body-in-white crash simulations by developing simplified failure models of additively-manufactured laminate structures to achieve target lightweighting.
- Validated simulations by designing test fixtures and measuring the multi-axial strength of AM parts.

Graduate Research Assistant, SMSL, The Ohio State University [June 2015 – Dec 2017]

- *Methods:* Signal processing (LabVIEW), Multiphysics FEA (COMSOL), CNC, Doppler velocimetry.
- Developed an automated power control algorithm to improve the weld strength by 22% to predict weld energy as a function of material and fixture geometry.
- Improved process efficiency of UAM by 20% by designing a tool to optimize fixture geometry using FEA and experimental modal analysis to increase the shear strength of welded joints.
- Instrumented an in-situ non-destructive statistical process controller (SPC) that signaled the success of UAM welding by monitoring the 20 kHz component of vibrations using a scanning vibrometer.

Intern, Engineering Design Center, Caterpillar Inc., Chennai, India [May 2014 – Dec 2014]

- Built an orifice selection tool for truck hydraulic systems with restriction orifices using an automated software tool to retrieve system information and suggest optimal orifice shape and size parameters.
- Selected to continue working with the institute in a collaboration project to simulate orifice flow models in ANSYS and for high-end software development in Microsoft Visual Studio.

Intern, Home Appliances Lab, LG Electronics, Noida, India [May 2013 – July 2013]

- Drove conception-to-prototype development of a convertible freezer system with adjustable cooling.
- Validated improvements in cooling efficacy using novel control mechanisms designed using ANSYS.

EDUCATION

- **Ph.D., Mechanical Engineering**, The Ohio State University, Columbus, OH [Jun 2015 – Feb 2022]
Specialization: Process characterization, Dynamical systems and control, Additive manufacturing
- **B.Tech. (Honors), Mechanical Engineering**, IIT Madras, Chennai, India [Aug 2011 - May 2015]

TECHNICAL SKILLSET

Instrumentation

Doppler velocimetry
Infrared thermography
NI LabVIEW

Programming

MATLAB / Simulink
JMP
Python / C# (Visual Studio)

Skills

Controller design
Statistical analysis (DOE)
Metallography
Structural characterization
High-speed I/O processing
Modal analysis
3D motion capture and DIC

FEA and CAD Modeling

ANSYS (Nonlinear / thermal)
COMSOL Multiphysics
LS-Dyna (Explicit)
CATIA and SolidWorks

Documentation

Adobe Illustrator
Microsoft Office Suite

Select courses: Nonlinear systems, Optimal and intelligent control, Smart materials

Select publications: Venkatraman, G., Hehr, A., Headings, L.M., Dapino, M., “Effect of system compliance on weld power in ultrasonic additive manufacturing”. Rapid Prototyping Journal (2021).

HONORS

NSF Summer Scholars Internship Program (SSIP) award [April 2021]

- Awarded a competitive national grant given to students for exceptional work on NSF grants.

Alumni Travel Grant, IIT Madras [March 2015]

- Selected from a college-wide application for travel support to an international conference.

Kishore Vaigyanik Protsahan Yojana (KVPY) fellowship, DoST, Government of India [Apr 2010]

- Chosen from 40,000 applicants in India for outstanding academic achievement.

LEADERSHIP, VOLUNTEERING, AND OUTREACH

International Leadership Scholarship, The Ohio State University [March 2020]

- One of 10 recipients at OSU to receive award for presiding over a student organization for 3 years.
- Helped raise awareness and support of over \$5000 annually for charitable causes in India since 2018.