Name and full correspondence address	**Avinash Kumar K. M.** A1 – 112, IIT Dharwad Permanent Campus, Chikkamalligawad Dharwad – 580011, Karnataka, India
Email and contact number	avinash.kumar.20@iitdh.ac.in, +919902483569
Institution	Indian Institute of Technology Dharwad
Date of Birth	26-06-1993
Gender	Male
Category	General
Whether differently abled	No

EDUCATION

Doctor of Philosophy in Mechanical Engineering, IIT Dharwad, Dharwad, India CGPA: 8.47	2020 – Present
Master of Technology in Machine Design, RV College of Engineering, Bengaluru, India CGPA: 8.97	2016 – 2018
Bachelor of Engineering in Mechanical Engineering, The National Institute of Engineering, Mysuru, India CGPA: 9.03	2010 – 2014

PROFESSIONAL EXPERIENCE

Raman Research Institute, Bengaluru || Research Assistant || July 05th 2018 – August 27th 2020
Project: *RRI Efficient Linear array Imager (ELI)*: A novel method to image the galactic plane in the frequency range 10-30 GHz, by reducing the primary area and at the same time increasing the instantaneous field of view.

BMM ISPAT LTD., Hosapete || Engineer, Bar Rod Mill || October 13th 2014 – August 31st 2016
Work: Supervision and monitoring of erection, commissioning of mechanical equipment like rolling stands, rolling stand assembly units, gear boxes, motor couplings, hydraulic and lubrication power packs that were spread across the Mill area, Cooling bed, Stacker and Handling area.

ACADEMIC RESEARCH EXPERIENCE

Indian Institute of Technology Dharwad (IIT Dharwad)   **September 2020 – Present**
Doctoral Student

Provisional thesis title: *Case-specific 3D models of arbitrarily complex branched topologies for modeling morphology and growth*
The work aims at generating CAD models from three-dimensional images obtained from medical scans. Hyperelastic material modelling of flexible membranes by studying their deformation under pneumatic pressures and morphological analysis of roots of hydroponically grown plants was also performed.
Supervisor: Dr. Samarth S. Raut, Assistant Professor, IIT Dharwad, Dharwad
- Studied the effect of segmentation accuracy and mesh smoothing on the geometric and mesh parameters
- Developed a rudimentary *GUI* to perform *semi-automatic segmentation* and *mesh smoothing* in Python
- Utilized *3D depth cameras* to track deformation and model *inflation of flexible membranes*, corroborated by numerical investigations using ANSYS
- Fabricated a setup to monitor growth and perform *morphological analysis* of roots of *hydroponically grown plants*

RV College of Engineering, Bengaluru   **July 2016 – July 2018**
Master Student

Thesis title: *Numerical investigation of hardness and residual stresses induced in an induction hardened rocker arm bearing shaft* || GTCI, SKF Bearings, Bengaluru (Worked with Mr. Vijayraghavan, Process Specialist)
The project dealt with simulation of the induction hardening process. The heat transfer simulation was carried

out using the CFD tool STARCCM+, followed using CAM tool DEFORM to compute the residual stresses due to quenching.
Supervisor: Dr. Nataraj J R, Associate Professor, RV College of Engineering

The National Institute of Engineering, Mysuru   **September 2010 – July 2014**
Bachelor Student

Thesis title: *Design of control system to delay stall using active flow control at subsonic flows* || CTFD, National Aeronautics Laboratory (CSIR), Bengaluru (worked with Dr. Ramesh V, Chief Scientist, CTFD, NAL)
Supervisor: Dr. T N Shridhar, Professor, Department of Mechanical Engineering, NIE
The entire project consisted of four modules. First module involved validation of a turbulence CFD model on NACA0012 aerofoil. The second module involved the inclusion of one of the many active flow-control methods available i.e., synthetic jets. The third module involved simulating an array of piezo resistive sensors to pick up stalling pressure prevalent over the aerofoil. The last module involved the design of a control system to simulate synthetic jets and optimize the parameters, namely speed and angle of mass ejection.

ACHIEVEMENTS

1. Awarded **second best poster** for "Error assessment in image based 3D reconstruction and 3D printing" at the **ANRF-INAE Conclave on Atmanirbhar Technologies: Engineering a Secure Future,** under the **"Indigenous Technology Development"** theme.

PUBLICATIONS/CONFERENCES

1. Avinash Kumar K M, Samarth Raut, "Error assessment in image based 3D reconstruction and 3D printing", 30th Congress of the European Society of Biomechanics 2025, ACCEPTED
2. Rahul Maurya, Avinash Kumar K M, Samarth Raut, "Contactless Mechanical Material Characterization of Hyperelastic Membranes Using Stereoscopic Depth Map", ASME SB3C Summer Bioengineering Conference 2025, ACCEPTED
3. Avinash Kumar K M, Aishwary Singh, D. Narasimha, Rahul Maurya and Samarth Raut, "Transfer-learning based multi-class areca nut image classification under uncontrolled lighting on a conveyor system for automated sorting", in *2024 IEEE Conference on Engineering Informatics (ICEI)*, pp. 1-7. IEEE, 2024.
4. Avinash Kumar K M, Hemantha Manjunatha, Aashish V Bhat, Bhagyashree Kulkarni, "Active flow control using Synthetic jets and neural network", 16th Annual CFD Symposium, NAL-CSIR, September 2014

TECHNICAL SKILLS

1. Programming Languages: C++, Python, Julia
2. Tools: MATLAB, ANSYS Workbench, SolidWorks, Autodesk Inventor, Latex, MS Office

REFERENCES

Dr. Samarth S. Raut
Assistant Professor,
Department of Mechanical, Materials, and Aerospace Engineering
Indian Institute of Technology Dharwad, Dharwad, India – 580011
sraut@iitdh.ac.in | +91 96206 52637

RESEARCH INTERESTS

Image-based reconstruction	Continuum mechanics	Mesh generation and smoothing
Computer vision applications	Growth mechanics	Hyperelastic modelling