

PROJECT COMPLETION CERTIFICATE

This is to certify that the consultancy project titled: **"AI based model for detection and analytics of needle cage bearing in main shaft"** has been successfully completed by the Centre of Excellence in Advanced Manufacturing Technology (CoEAMT) at the Indian Institute of Technology Kharagpur.

The project has been executed under the supervision of **Professor Surjya K. Pal, Chairperson, CoEAMT, IIT Kharagpur**. We acknowledge the following individuals for their significant contributions to the successful execution of this project: **Mr. Soumik Nayak (ME), Mr. Gaddam Kranthikumar (ME), Mr. Souvik Karmakar (ME), Dr. Ananta Dutta (ME), Mr. Rishabh Swarnkar (ME), and Mr. Avishek Mukherjee (ATDC)**.

The objective of the project was to develop an intelligent computer vision-based system for automated inspection in the transaxle assembly line. The project was delivered in the following two parts:

- *Automated checking of gear assembly in the transaxle line using computer vision.*
- *Automated detection of the presence of needle cage bearings in the transaxle line using computer vision.*

Against the aforementioned requirements CoEAMT team has developed and delivered:

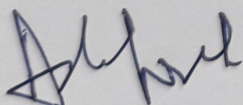
- *A user-friendly graphical user interface (GUI) for both inspection systems.*
- *Integrated communication with the PLC (Programmable Logic Controller) to ensure real-time process control and data exchange.*

We are pleased to confirm that all deliverables outlined in the project scope have been successfully developed, tested, and handed over to **Gear Box Assembly, Transmission Factory (TML)**. The solution is currently operational and performing as expected.

As per PO terms IITKGP team, will provide online support for one year duration for any issues related to the software, unstable detection under normal operation, new product introduction in deployed station.

We look forward to continued collaboration and future opportunities for innovation.

Sincerely,



ASHUTOSH TRIPATHY

