Nikhil Chaurasia

PhD Scholar   **Cellphone:** (+91) 9169310210
Department of Materials Science and Engineering   **Email:** nikolspace@gmail.com,
Indian Institute of Technology Kanpur, Kanpur, India-208016   nikc@iitk.ac.in

Education

Doctor of Philosophy (PhD), 2023   8/10
Materials science and Engineering, IIT Kanpur, India
Advisors: Dr. S. Sangal and Dr. Shikhar K. Jha

Master of Technology (M.Tech), 2018   7.9/10
Metallurgical and Materials Engineering, NIT Suratkal, India
Advisor: Dr. Udaya Bhat K. and Mr. Karthik Karkera (Hilti India)

Bachelor of Technology (B.Tech), 2015   69.96/100
Mechanical Engineering, UPTU Kanpur, India

Area of Expertise

Machine Learning:	CNN, GANs, Random Forest, UNET, KNN, PCA and Image Processing
Characterization:	Metallography, Optical microscopy, W-SEM, FE-SEM, Fractographic analysis, EBSD, TEM, XRD, XRF, OES, AFM
Mechanical testing:	Tensile test, Rockwell and Vickers hardness test, 3-point bend test and sliding wear test
Coding:	Python, C, HTML, Arduino, SQL

Academic Project

A novel training methodology for phase segmentation of steel microstructure using deep learning algorithm (PhD Thesis)
- A new training method is devised to generate the training dataset.
- Web application development for the above devised method.

Pearlite lamella orientation measurement using deep learning algorithms
- Pearlite lamella orientation is calculated using machine learning.
- Web application development for the above devised work.

Automated single phase microstructure cleaning and reconstruction using deep learning
- Single phase microstructure noise removal and reconstruction of broken boundaries.
- Web application development for the above devised work.

Automated grain size measurement of the single-phase microstructures using image processing

- Grain size measurement using 3 circle method.
- Web application development.

Industrial Project

Magnetic particle inspection technique development (HAL Bangalore)

- Standardization of the process.
- Developed non destructive magnetic particle inspection technique for the stub support in the category of Dornier project.

Characterization of laser welded dissimilar joints (Hilti India)

- Characterization of weldment of sintered Iron Nickel and the medium carbon steel was performed.
- Optimization and the standardization of the process of Laser welding.

Awards

- Received the **best poster presentation** award for the topic entitled "**Using a deep learning algorithm, a new way to train for phase segmentation of steel microstructure**" at the International Conference "Advances in materials: challenges & opportunities" 2022 IIT Roorkee.
- Runner- up position in Seminar Presentation award in MSE 691A seminar 2018.
- Runner up position in **Boeing National Aeromodelling** at IIT Kanpur.
- Runner up of **Mr. Fresher** of "Udbhav" during B. Tech in 2011.
- Runner up position in **senior Regional Basketball Championship**.
- **Lean six sigma** Green belt.

Professional experience

- Active member of **Toastmaster Club** IIT Kanpur   *Present- May23*
- **Teaching Assistant**, TEM, IIT Kanpur   *June 23-Nov 22*
- **Teaching Assistant**, FE-SEM IIT Kanpur   *Nov 22- June 21*
- **Teaching Assistant**, W-SEM IIT Kanpur   *June 21 -Nov 20*
- One Year Research Intern in **Hilti India Pvt. Ltd. Surat**   *June 18 -July 17*

Positions of responsibility

- Core member of Ranjit Singh Rozi Shiksha Kendra (RSK) institute project (2022) – for employability of rural youth.
- Organized the Research Scholar Day 2022.
- Placement Coordinator in M. Tech 2017 at NIT-K, Suratkal.

Publications and Conferences

- **Nikhil Chaurasia**, S.K Jha, S. Sangal, A novel training methodology for phase segmentation of steel microstructure using deep learning algorithm, Materialia, (2023).
- **Nikhil Chaurasia**, S.K Jha, S. Sangal, Using a deep learning algorithm, a new way to train for phase segmentation of steel microstructure, "AMPCO'22-International conference"
- **Nikhil Chaurasia**, S.K Jha, S. Sangal, Segmentation of Steel Microstructures Using a Novel Training Approach via Deep Learning, "Perspectives in Materials Research" (Platinum Jubilee Conference 2022) (held in IISc Bangalore).
- **Nikhil Chaurasia**, S.K Jha, S. Sangal, Phase segmentation of the ferrite-pearlite microstructure using Machine Learning 71st Annual Technical Meet, National Metallurgists' Day (NMD ATM), The Indian Institute of Metals (2021) (presented online).

Personal Information

- Date of birth: 21-July-1993
- Sex: Male
- Father's Name: Mr. S.R Chaurasia

- Language known: Hindi, English, German
- Hobbies: Coding, Playing Chess, Guitar
- Mother's Name: Mrs. Shobha Chaurasia

Reference

Dr. S. Sangal
Professor
Department of Materials Science and Engineering
IIT Kanpur, India-208016
Contact no.- +91 512 259 7167
Email: sangals@iitk.ac.in

Dr. S.K Jha
Assistant Professor
Department of Materials Science and Engineering
IIT Kanpur, India-208016
Contact no.- +91 512 259 2094
Email: skjha@iitk.ac.in