Nikhil Kumar Tomar

GitHub
Google Scholar
ResearchGate
LinkedIn
Personal website

nikhilroxtomar@gmail.com

Research Interests

Artificial intelligence, Computer Vision, Deep Learning, Medical Image Analysis, Computer Aided Diseases Detection and Diagnosis

Experience

Research Volunteer – Northwestern University, Chicago, Illinois, United States **Nov 2022 - Present**

- Conduct the research on Robustness and Generalization in deep learning for different medical applications.

Research Assistant – NepAL Applied Mathematics and Informatics Institute for Research (NAAMII), Kathmandu, Nepal Oct 2021 - March 2022

- Conduct the fundamental research on Machine learning applications for Endoscopy, Developing ML methods and published at the conference.

Blogger - idiotdeveloper.com **Jan 2020 - Present**

- I have written multiple article and tutorials topics such as: Image Classification, Segmentation, Transfer Learning, Generative Adversarial Networks and any more.
- Multiple tutorials related to TCP and UDP socket program in C and Python language.

YouTuber - Idiot Developer **Jan 2018 - Present**

- **Deep Learning:** Tutorials on topics related to computer vision like: Image Classification, Segmentation, Transfer Learning, Generative Adversarial Networks and any more.
- **Socket Programming:** Multiple videos on socket programming in C and Python language.

Education

Indira Gandhi National Open University,
New Delhi, India
Masters of Computer Application,
2022 - Ongoing

Indira Gandhi National Open University,
New Delhi, India
Bachelor of Computer Application,
2014 - 2017

Technical Skills

Programming Languages : Python, Matlab, JavaScript, C, C++
Libraries: TensorFlow, Keras, PyTorch, Numpy, Pandas, OpenCV, Scikit-Learn, Jupyter, Matplotlib
Database : MySQL
Productive Tools : Latex
Web Technology : PHP, Javascript, HTML, CSS
Software : Visual Studio, Docker, Microsoft Office
Hardware : Raspberry Pi

Projects

- Implemented U-Net, ResU-Net, DeepLabV3+ – TensorFlow & PyTorch.
- U-Net with pre-trained encoders in TensorFlow.
- Human Image Segmentation using U-Net & DeepLabV3+ in TensorFlow.
- Polyp Segmentation using U-Net in TensorFlow 2.0.
- Implementing DCGAN on Anime Faces in TensorFlow.
- Built the Feedforward Neural Network in Numpy.
- Simple Operating System using C & Assembly Language.

Publications: (International Journals)

N. K. Tomar, D. Jha et al., FANet: A Feedback Attention Network for Improved Biomedical Image Segmentation, **IEEE Transactions on Neural Networks and Learning Systems**, 2022

N. K. Tomar and S. Ali, Iterative deep learning for improved segmentation of endoscopic images, **Nordic Machine Intelligence**, vol. 1, pp. 38-40, 2021.

D. Jha, S. Ali, **N. K. Tomar**, D. Johansen, J. Rittscher, H. Johansen, M. A. Riegler, and P. Halvorsen, Real-Time Polyp Detection, Localisation and Segmentation in Colonoscopy Using Deep Learning, **IEEE Access**, vol. 9, pp. 40496–40510, 2021.

International Conferences

N. K. Tomar, D. Jha, & U. Bagci, DilatedSegNet: A Deep Dilated Segmentation Network for Polyp Segmentation, **MMM**, 2023.

N. K. Tomar, D. Jha, U. Bagci, & S. Ali, TGANet: Text-Guided Attention for Improved Polyp Segmentation, **MICCAI**, 2022. [Travel Award Winner]

N. K. Tomar, A. Srivastava, U. Bagci, D. Jha, Automatic Polyp Segmentation with Multiple Kernel Dilated Convolution Network, **IEEE CBMS**, 2022.

N. K. Tomar, A. Shergill, B. Rieders, U. Bagci, D. Jha, TransResU-Net: Transformer based ResU-Net for Real-Time Colonoscopy Polyp Segmentation, **IEEE BHI**, 2022.

N. K. Tomar, N. Ibtehaz, D. Jha, P. Halvorsen, S. Ali Improving Generalizability in Polyp Segmentation using Ensemble Convolutional Neural Network, **Working note proceeding at CEUR-Ws**, 2021.

D. Jha, **N. K. Tomar**, S. Ali, M. A. Riegler, H. D. Johansen, D. Johansen, T. D. Lange, and P. Halvorsen, NanoNet: Real-Time Polyp Segmentation in Video Capsule Endoscopy and Colonoscopy, **Proceedings of IEEE Computer Based Medical System (CBMS)**, IEEE, 2021.

A. Srivastava, **N. K. Tomar**, U. Bagci, D. Jha Video Capsule Endoscopy Classification using Focal Modulation Guided Convolutional Neural Network, **Proceedings of IEEE Computer Based Medical System (CBMS)**, IEEE, 2022.

D. Jha, S. Ali, **N. K. Tomar**, M. A. Riegler, D. Johansen, H. D. Johansen, and P. Halvorsen, Exploring Deep Learning Methods for Real-Time Surgical Instrument Segmentation in Laparoscopy, **Proceedings of IEEE International Conference on Biomedical and Health informatics (BHI)**, IEEE, 2021.

S. Alam, **N. K. Tomar**, A. Thakur, D. Jha and A. Rauniyar, Automatic Polyp Segmentation using U-Net-ResNet50, **Working note proceeding at CEUR-Ws**, 2020.

Workshops

N. K. Tomar, D. Jha, S. Ali, H. D. Johansen, D. Johansen, M. Riegler, and P. Halvorsen, DDANet: Dual Decoder Attention Network for Automatic Polyp Segmentation, **Proceedings of ICPR workshop**, 2020.

N. K. Tomar "Automatic Polyp Segmentation using Fully Convolutional Neural Network, **Proceedings of Mediaeval 2020 workshop**, 2020.

Languages English (Full professional proficiency), Hindi (Fluent)

References References would be provided upon request.