

# Tanveer Hannan

✉ hannan@dbis.ifi.lmu.de

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## Research Interest

- Machine Learning    📖 Deep Learning, Multi-Modal Learning, Self-Supervised Learning, Unsupervised Clustering, Large Language Modeling, Natural Language Processing.
- Computer Vision    📖 Video Understanding, Long-Range Video Modeling, Image and Video Recognition, Object Detection and Tracking, Vision-Language Modeling.

## Education

- 2022 – Present    📖 **Ph.D. in Computer Science**, 2nd Year, LMU Munich  
Advisor: [Thomas Seidl](#)  
Teaching: *Deep learning and Artificial Intelligence, Knowledge Discovery and Data Mining, Connecting Language to Vision and Robotics.*
- 2019 – 2021    📖 **M.Sc. in Data Science**  
LMU Munich CGPA 1.06/4.00 (best 1.0 out of 4.0)
- 2014 – 2018    📖 **B.Sc. in Computer Science and Engineering**  
Bangladesh University of Engineering and Technology  
CGPA 3.79/4.00 (3.93 final 2 years)

## Experience

- Jul 21 – Dec 21    📖 **Research Intern**, [Hensoldt Analytics](#)  
Computer Vision, Video Segmentation & Tracking
- Oct 20 – Jun 21    📖 **Research Assistant**, [MCML](#)  
Vision Transformer, Object Detection
- Oct 20 – Apr 21    📖 **Research Intern**, [Siemens](#)  
Reinforcement Learning, Optimization
- Nov 18 – Aug 19    📖 **Software Engineer** [Helical Inc.](#)

## Research Publications

- 5 GRAtt-VIS: Gated Residual Attention for Auto Rectifying Video Instance Segmentation  
**T Hannan\***, R Koner\*, M Bernhard, S Shit, B Menze, V Tresp, M Schubert, T Seidl  
In *ArXiv* 2023. [[pdf](#)]
- 4 InstanceFormer: An Online Video Instance Segmentation Framework  
R Koner\*, **T Hannan\***, S Shit, S Sharifzadeh, M Schubert, T Seidl, V Tresp  
In *The Conference on Artificial Intelligence (AAAI)* 2023. [[pdf](#)]
- 3 Box Supervised Video Segmentation Proposal Network  
**T Hannan\***, R Koner\*, J Kobold, M Schubert  
In *Irish Machine Vision and Image Processing Conference (IMVIP)* 2022. [[pdf](#)]
- 2 Prediction of Soft Proton Intensities in the Near-Earth Space Using Machine Learning  
E. Kronberg, **T Hannan**, J Huthmacher, M Münzer, ..., R Ilie  
In *The Astrophysical Journal* 921 (1). [[pdf](#)]
- 1 COVID-DenseNet: A Deep Learning Architecture to Detect COVID-19 from Chest Radiology Images

## Selected Projects

GRAtt-VIS	■ An efficient video instance segmentation and tracking model that achieves state-of-the-art results on several benchmarks, such as YTVIS and OVIS.
InstanceFormer	■ A single-stage, tracker-free, sparse spatiotemporal transformer-based online architecture that achieves SOTA VIS performance without bells and whistles. It can process arbitrary long video sequences at a constant memory and FPS.
BoxVOS	■ A Box supervised Video Object Segmentation Framework which eliminates the need for per frame segmentation masks.
Seq-Modeling	■ Prediction of Earth's Radiation Environment using Sequential Modeling of the astronomical features.
H-Attention	■ Designing a Hierarchical Attention based Transformer network for End-to-end Object Detection.
RL-Optimizer	■ Customized Reinforcement Learning Environments to optimize the reorder point to minimize both inventory and stockout costs.
COVID-DenseNet	■ A CNN-based model to detect COVID-19 from chest radiology images which can localize the critical regions of affected images using a GRAD-CAM-based module.
Adversial Attack	■ GAN Based Image Steganography is designed with Adversarial Attacks to fool steganographic image classifier.
BenglaAI	■ A CNN-based model for Bengali Handwritten Digit Recognition.
Big Data Analysis	■ Comparing the Performance of Garbage Collectors for Big Data Systems and Developing an interface in OpenJDK-10 enables GC customization.
UniShare	■ An academic resource-sharing platform developed using PHP, CodeIgniter framework, MySQL, JavaScript, HTML, CSS, and XAMPP server.
PoliceBox	■ An interactive server-client system developed using Java Swing, JavaFX, MySQL, and Socket Programming to manage services provided by the police efficiently.
C compiler	■ A simple C compiler using Flex and Bison.

## Skills

ML tools	■ PyTorch, TensorFlow, Keras, Jupyter, Distributed training.
Coding	■ Python, Java, C, C++, Java HTML, XML, PHP, JavaScript, 80x86 Assembly.
Soft Dev	■ Oracle, MySQL, Spring Framework, HTML, CSS.
Misc.	■ Lex, Yacc, Shell Script, LaTeX, Git.

## Miscellaneous Experience

### Awards and Honors

2018	■ <b>9th place.</b> <i>Bengali Handwritten Digit Recognition Challenge</i> , Kaggle Competition 2018.
2016	■ <b>Semi-finalist</b> in University Debate Championship
2014-16	■ <b>University Merit List</b> , Bangladesh University of Engineering and Technology.
2014	■ <b>Finalist</b> in the 4th Stamford National Debate Championship
2012	■ <b>Champion</b> of Inter-School Debate Competition