



# Mohit Vaishnav

## Artificial Intelligence Engineer



### Profile

Highly accomplished engineer with expertise in domains, including artificial intelligence, deep learning, computer vision, and data compression. Proven track record in conducting groundbreaking research and publishing in top-tier conferences and journals. Skilled in developing novel architectures and prototypes, applying computer vision techniques, and optimizing algorithms for improved performance. Adept at managing teams and operations, demonstrating leadership and process improvement capabilities.



### Work experience

Present  
day  
↓  
01/2023

#### Data Scientist

*Center for AI and Automation, Sandvik GmbH*

- Led development and deployment of end-to-end AI solutions within an Azure environment, collaborating with stakeholders to align business needs and execute strategic initiatives.
- Working towards delivering platform responsibility, ensuring seamless integration and optimization of AI services to enable capability creation and accelerate business growth in a dynamic international environment.

12/2019  
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11/2023

#### Researcher

*German Research Centre for Artificial Intelligence (DFKI)*

- Initiated the work of designing perception systems specifically tailored for driver behavioral modeling within the domain of connected, cooperative, and automated mobility (CCAM) project *BERTHA* – an EU Horizon project.
- Conducted the first study to apply Bayesian Belief Networks (BBN) extensively to construct scalable and probabilistic Driver Behavioral Models (DBM), ensuring both technological feasibility and practical applicability in real-world scenarios.

10/2019  
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04/2023

#### Doctoral Researcher

*Brown University (USA) / ANITI (France)*

- Conducted research and identified the challenges faced by machines in performing abstract reasoning tasks, highlighting its disparity with humans' performance.
- Developed novel architecture by leveraging insights from cognitive science literature, specifically the role of attention and memory.
- Created a prototype model that successfully combines attention and memory, resulting in state of the art performance on two visual reasoning dataset.
- Designed and optimized multi-million parameter models utilizing Transformer architecture to accommodate higher resolution images without compromising computational complexity, resulting in outstanding performance on real-world classification challenges.



### Contact



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### Skills

#### Core Area:

- Artificial Intelligence
- Computer Vision
- Generative AI
- Cognitive science
- Attention and Memory process
- Computational Neuroscience
- Visual reasoning
- Medical Imaging
- Data Analytics

#### Technical Expertise:

- OpenCV
- Classification
- Object Detection
- Scene Segmentation
- Python
- Github
- Slurm Work Manager
- Spark
- Pytorch
- Scikit-Learn
- High Performance Computing
- Azure Databricks
- PowerBI
- Pandas



### Publication

[Google scholar](#) – for complete list

- GAMR: Guided Attention Model of (visual) Reasoning.” *International Conference on Learning Representations*
- A Benchmark for Compositional Visual Reasoning. *In Proceedings of the Neural Information Processing Systems (NeurIPS) Track on Datasets and Benchmarks*
- Understanding the Computational Demands Underlying Visual Reasoning. In Special Collection CogNet of *Neural Computation*
- Conviformer: Convolutionally guided Vision Transformer. *ArXiv*

02/2019  
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08/2019

06/2018  
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08/2018

09/2016  
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08/2017

10/2014  
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08/2016

09/2013  
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09/2014

10/2019  
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04/2023

09/2017  
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09/2019

08/2009  
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05/2013

## Research Engineer

*WeDiagnostiX, Paris France*

- Developed the first working prototype for the classification and understanding of maxillary structures from X-ray images.
- Demonstrated expertise utilizing Deep Learning algorithms for semantic and instance segmentation of teeth.
- Created an end-to-end pipeline, including data collection and labeling, to build a functional model.
- Responsible for the entire project, ensuring smooth progress from data collection to the development of a fully operational prototype.

## Research Engineer

*Quelia Systems, Paris France*

- Developed an application for estimating tire wear during a summer internship.
- Utilized computer vision techniques and a portable mobile camera to measure the depth of tire treads.
- Contributed to enhancing safety on the road by providing a user-friendly solution for assessing tire conditions.

## Startup Founder

*Kevin Technology, Rajasthan India*

- Founded a start-up with a vision to develop surveillance system based on computer vision techniques.

## Assistant Manager

*Shree Bherunath Granite, Rajasthan India*

- Assisted in establishing granite mines for the family business and assumed a pivotal role in managing the daily operations.
- Supervised a team of 20 employees, ensuring smooth workflow and efficient execution of tasks.
- Implemented strategies and process improvements that positively impacted the overall efficiency and productivity of the team.

## Research Assistant

*Indian Institute of Technology, Jodhpur India*

- Successfully developed innovative methodologies for loss-less video compression, contributing to the field of data compression.
- Published research work in a top-tier conference dedicated to data compression (DCC, Snowbird, USA), showcasing expertise and recognition within the academic community.



## Education

### Doctor of Philosophy

*Artificial and Natural Intelligence Toulouse Institute (AN-ITI), France and Brown University, USA*

*Major: Artificial Intelligence/Computational Neuroscience*

### Masters of Science

*Erasmus Joint Masters with University of Bourgogne (France), University of Girona (Spain) and Heriot-Watt University (U.K.)*

*Major: Computer Vision and Robotics*

### Bachelor of Technology

*LNM Institute of Information Technology, India*

*Major: Electronics and Communication Engineering*



## Awards

- Agence Nationale de la Recherche (ANR) fellowship during Ph.D.
- Charpak Masters Scholarship from French Government
- Santander Grant by University of Girona
- Erasmus+ Mobility Grant by European Commission
- Bourgogne Regional Council Grant
- Kishor Vaigyanic Protsahan Yojna fellowship funded by Govt. of India
- Travel grant from Microsoft Research India



## Leadership

- Elected as Student representative for ANITI, France
- Elected Member of Senate, *Science and Tech. Council*, LNMIIT, India
- Founder and Membership head, *IEEE Student branch*, LNMIIT, India



## Reviewer Task

- IEEE Transaction on Evolutionary Computation
- NeurIPS
- CVPR
- ICML
- ECCV



## Teaching

**At Federal University of Toulouse Midi-Pyrénées, France**

- Introduction to Computer vision
- Visual Reasoning in Computer Vision
- Initiation to research work



## Conference Talks

- *International Conference on Learning Representation (ICLR)*, Rawanda
- *Geological Society of America, Connects*, Denver (USA)
- *Botany* (virtual)
- *Brown Unconference*, USA