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 ↓ 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 ↓ 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

Email
mohit.vaishnav@gmail.com

Website
vaishnavmohit.github.io

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 ↓ 08/2019

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.

06/2018 ↓ 08/2018

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.

09/2016 ↓ 08/2017

Startup Founder

Kevin Technology, Rajasthan India

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

10/2014 ↓ 08/2016

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.

09/2013 ↓ 09/2014

Research Assistant

Indian Institute of Technology, Jodhpur India

- Successfully developed innovative methodologies for lossless 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

10/2019 ↓ 04/2023

Doctor of Philosophy

Artificial and Natural Intelligence Toulouse Institute (ANITI), France and Brown University, USA

Major: Artificial Intelligence/Computational Neuroscience

09/2017 ↓ 09/2019

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

08/2009 ↓ 05/2013

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-Pyrènèes, 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