Mohit Vaishnav

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EDUCATION

Doctor of Philosophy, Oct 2019 - till dated
Serre Lab, Brown University, USA
Artificial and Natural Intelligence Toulouse Institute (ANITI), France
Topic: Learning where to attend and what to remember
Supervisor: Thomas Serre (Professor, Brown University, USA)

Erasmus Joint Masters Sept 2017 - 2019
*Computer **VI**sion and Ro**BOT**ics (VIBOT)*
Semester 1: University of Bourgogne, France (CGPA: 15.1/20)
Semester 2: University of Girona, Spain (CGPA: 9/10)
Semester 3: Heriot Watt University, UK (CGPA: 75.6/100)
Thesis: *MU-Net*: A deep learning model for teeth segmentation from panoramic X-ray images
Supervisor: Hugues Talbot (Professor, CentraleSupèlèc, France)

Bachelor of Technology (Hons.) July 2009 - 2013
Electronics and Communication Engineering
LNM Institute of Information Technology, Jaipur, India (CGPA: 7.89/10.00),
Thesis: Residue coding technique for video compression
Supervisor: A. K. Tiwari (Assoc. Professor, Indian Institute of Technology, Jodhpur, India)

AREA OF INTEREST

Artificial Intelligence, Computational Neuroscience, Visual reasoning, Computer Vision, Pattern Recognition, Medical Imaging, Machine Intelligence

PUBLICATIONS

Mohit Vaishnav, Remi Cadene, Andrea Alamia, Drew Linsley, Rufin VanRullen, Thomas Serre; "Understanding the Computational Demands Underlying Visual Reasoning." *Neural Computation* 2022; 34 (5): 10751099. doi: https://doi.org/10.1162/neco_a_01485

Mohit Vaishnav, Thomas Serre; "MAREO: Memory- and Attention- based visual REasOning." *ArXiv* abs/2206.04928 (2022)

Aimen Zerroug, **Mohit Vaishnav**, Julien Colin, Sebastian Musslick, Thomas Serre; "*A Benchmark for Compositional Visual Reasoning.*" *ArXiv* abs/2206.05379 (2022)

Mohit Vaishnav, Binny Tewani and Anil Kumar Tiwari; "Residue coding technique for video compression", 24^{th} IEEE *Data Compression Conference (DCC)* (2014), Snowbird, UT, USA, doi: 10.1109/DCC.2014.92

Mohit Vaishnav and Anil Kumar Tiwari; "Bin classification using temporal gradient estimation for lossless video coding", 24^{th} IEEE *Data Compression Conference (DCC)* (2014), Snowbird, UT, USA, doi: 10.1109/DCC.2014.93

Mohit Vaishnav, Dinesh Kumar Chobey, and Anil Kumar Tiwari; "Temporal Stationarity

Based Prediction Method For Lossless Video Coding". In Proceedings of the 2014 *Indian Conference on Computer Vision Graphics and Image Processing (ICVGIP)*. Association for Computing Machinery, New York, NY, USA, Article 39, 16. https://doi.org/10.1145/2683483.2683522

Dinesh Kumar Chobey, **Mohit Vaishnav** and Anil Kumar Tiwari; "An optimal switched adaptive prediction method for lossless video coding", 23^{rd} IEEE *Data Compression Conference (DCC)* (2013), Snowbird, UT, USA, doi: 10.1109/DCC.2013.63

Mohit Vaishnav, Ashwani Sharma and Anil Kumar Tiwari; "A noble computationally efficient motion compensation method based on pixel by pixel prediction", 21^{st} IEEE *Data Compression Conference (DCC)* (2011), Snowbird, UT, USA, doi: 10.1109/DCC.2011.83

TEACHING EXPERIENCE

- Taught *Basics of Introduction to Computer vision* at the Federal University of Toulouse Midi-Pyrènèes, France — 2021,'22
- Taught *Visual Reasoning in Computer Vision* at the Federal University of Toulouse Midi-Pyrènèes, France — 2021,'22
- Supervised 15 M1 students at Paul Sabatier University, France for the course *Initiation to research work (project) (EMINC2B2)*, — 2021
- Teaching Assistant for Electronics lab at LNMIIT — 2010

LEADERSHIP POSITION

- Elected as Student representative for *ANITI*, France — 2020-'22
- Elected Member of Senate, *Science and Tech. Council*, LNMIIT, India — 2013
- Founder and Membership head, *IEEE Student branch*, LNMIIT, India — 2012
- Founder and Organizer, Technical Festival *Plinth*, LNMIIT, India — 2012

AWARDS

- 5^{th} position on Kaggle competition *Herbarium 2021* — 2022
- Agence Nationale de la Recherche (ANR) fellowship towards completion of Ph.D. — 2019-22
- Charpak Masters Scholarship from French Government — 2017
- Santander Grant by University of Girona (Spain) — 2017
- Erasmus+ Mobility Grant for Masters study abroad by European Commission — 2017
- Bourgogne Regional Council Grant — 2017
- Travel grant from Microsoft Research for Data Compression Conference — 2011
- Selected in Govt. of India,National fellowship scheme, Kishor Vaigyanic Protsahan Yojna funded by DST, in Engineering stream — 2010

COURSES

- Attended Reinforcement Learning Virtual School, organized by ANITI 2021
- Attended Computational Neuroscience course on Coursera 2021
- Attended Computational Psychiatry Course organized by the Translational Neuromodeling Unit, University of Zurich & ETH Zurich 2020
- Machine Learning course of Andrew Ng by Coursera 2018

EXPERIENCE

- Reviewer IEEE Transaction on Evolutionary Computation 2012, NeurIPS 2021, CVPR 2022, ICML 2022, ECCV 2022
- Masters Thesis with a Dental AI startup, WeDiagnostiX: Developed their first working prototype for the classification/understanding of maxillary structures from X-ray imaging using Deep learning, 2019
- Summer Internship at Quelia Systems Inc. and ESIEE Paris under the supervision of Professor Hugues Talbot, ESIEE Paris. Developed an algorithm to estimate vehicle tire wear using Computer Vision techniques (tread measurement) 2018
- Research Assistant in Ajman University, U.A.E. 2018
- Offshore working with Suspect Technologies Inc., a startup by Massachusetts Institute of Technology (MIT) Camera Culture Group members. 2016
- Contributed to **Kumbhathon** for innovating the Kumbha festival by MIT USA and developed an algorithm for "Abnormal Motion Detection" 2015
- Undergraduate Summer Research Internship at Indian Institute of Science (IISc), Bangalore (India), under the supervision of Prof. K. R. Ramakrishnan and worked on 3D Video Synopsis: Capturing to Transmission 2012
- Undergraduate Summer Research Internship at Global Internship Program In Engineering Innovation And Design Indian Institute of Technology (IIT) Delhi (India), where I wrote a review on Compression Sensing. 2011
- Undergraduate Summer Research Internship at Indian Institute of Technology (IIT), Jodhpur (India), under the supervision of Prof. A. K. Tiwari and worked on developing lossless Video compression techniques, 2010

CONFERENCE TALKS

- "Using Artificial Intelligence To Identify Fossil Angiosperm Leaves At Family Level", Geological Society of America, Connects, Denver (USA) 2022
- Mohit Vaishnav, Thomas FEL, Ivan Felipe, Jacob A Rose, Peter Wilf, Thomas Serre, "Understanding how deep neural networks categorize living and fossil leaves", Botany (virtual) 2021
- Ivan Felipe, Jacob A Rose, Thomas FEL, Mohit Vaishnav, Peter Wilf, Thomas Serre, "A deep-learning-based approach for automated fossil leaf identification", Botany (virtual) 2021
- Computational models of visual reasoning at Brown Unconference, 2021

TECHNICAL SKILLS

Languages : Python, C++, C, Matlab, OpenCV, ROS

Tools/Framework : Pytorch, TPU Programming, Keras, Tensorflow, ITK Snap, SimpleITK, MeVisLab

General : Latex