Anubha Parashar

Computer Vision | Deep Learning | Biometrics | AI | ML | IoT

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DOCTORAL RESEARCH

"Robust Gait Recognition System Using Deep Learning to Handle Covariates"

– Automated gait recognition using deep learning to identify persons based on their body shape and walking styles.
– Recognition accuracy is affected by clothing conditions, carrying objects, varying viewing angles, occlusion, and adversarial changes in datasets, making it a challenging problem.
– I designed a deep learning pipeline to handle various gait covariates that act as a universal deep learning pipeline that can handle most gait covariates, rather than using different deep learning pipelines.

WORK EXPERIENCE

CURRENT, FROM JUL 2016

1. Manipal University Jaipur, India
Sr. Assistance Professor (CSE Department)

An academician with research and professional interests in Deep Learning, Machine Learning, Bipedal Locomotion, Humanoid Robotics (locomotion & push recovery), Biometrics Gait, Neural Networks, Internet of Things, Artificial Intelligence, Image processing, Computer Vision and Natural Language Processing.

JUL 2013 – JUL 2014

2. Sconad Communication, Mumbai, India
Level 3 Research Associate

– Determined, using Python clustering methods, where models were underperforming, and owned improvements to increase profit by 4%.
– Identified procedural areas of improvement through customer data to improve the profitability of a nationwide retention program by 8%.
– Developed and owned the reporting for a nationwide retention program using Python, SQL, and Excel, saving an average of 60 hours of labor each month.

JAN 2013 – JUL 2013

3. ZMQ Technologies, Gurugram, India
Intern - Android, J2ME App Development

– Designed and developed Mobile App using Android and J2ME platform and Oracle as Backend.
– Completed eight major projects, working closely with agile development team to develop, test and maintain.
– I received praise for reaching difficult areas and my innovative use of a crowbar to assist in my work.

PROJECTS

1. FACE DE-IDENTIFICATION USING DEEP LEARNING

FER, University of Zagreb, Zagreb, Coratia (Sep 2018 – Dec 2019)

Technology: Computer Vision, Deep Learning, Image Processing, Dlib.

I designed a pipeline that modifies face geometry and texture without losing the naturalness of dataset, thus preserving the privacy of dataset.

EDUCATION

2018 – 2023 **Doctor of Philosophy**
Computer Science and Engineering (AI)
Manipal University, India

2014 – 2016 **Master of Technology**
FIRST CLASS HONORS
Computer Science and Engineering (AI)
Maharshi Dayanand University, Rohtak, India

2009 – 2013 **Bachelor of Technology**
FIRST CLASS HONORS
Computer Science and Engineering
Maharshi Dayanand University, Rohtak, India

SKILLS

LANGUAGE	PYTHON (Numpy, Pandas, CUDA), JAVA, C.
SOFTWARE PLATFORM	Anaconda, Matlab, Colab, Tensorflow, Arduino Studio, GitHub, Latex, Blender.
LIBRARIES	OpenCV, Keras, Dlib, GPT-3.
HARDWARE PLATFORM	Jetson Nano, Raspberry Pi, Arduino, Banana pi, ArduCopter, KK2.1, 8051, NodeMCU.
CLOUD	Thingspeak, AWS, Azure, GCP, WATSON.
DATABASE	Firebase, MySQL, MongoDB.
OPERATING SYSTEM	Windows, Linux, Raspbian, Android.

COURSES

IBM COURSERA – APRIL 2022	Data Science Fundamentals with Python and SQL Specialization.
STANFORD UNIVERSITY COURSERA – APRIL 2022	Deep Learning Specialization @ deeplearning.ai
WASHINGTON UNIVERSITY COURSERA – MAR 2022	Machine Learning Specialization.
NVIDIA MAY 2021	Getting started with Deepstream for Video Analytics on Jetson.
NVIDIA MARCH 2021	Getting Started with AI on Jetson Nano.
GOOGLE JULY 2020	Fundamentals of Digital Marketing.

PATENTS - (5)

1. Anubha Parashar (2022). A Covariate-based Gait Recognition System and Method for Edge A nalytics Using Optimized Deep Learning Pipeline. *Indian Patent*, *Status: Granted* (202111034240).

2. RECOGNITION THROUGH GAIT FOR SURVEILLANCE

Manipal University, Jaipur, India (Jan 2018 – Sep 2022)

Technology: Computer Vision, Deep Learning, Biometrics, GANs.

I designed a deep learning pipeline to identify persons based on their body shape and walking styles.

3. IOT ENABLED WHITE BOARD MARKER

Manipal University, Jaipur, India (Jan 2018 – Sep 2022)

Technology: IoT, Image Processing, Microcontroller - Arduino Mega.

I designed a Cost-effective automated marker system for drawing on a whiteboard.

4. SMART ASSISTANCE SPOON FOR PARKINSON PATIENTS

Manipal University, Jaipur, India (Jan 2017 – Dec 2018)

Technology: IoT, Microcontroller - Arduino UNO, 3D printing - Blender

– Used blender to design robotic arm and 3D printed it to feed patients.
– Designed Android App to handle the robotic arm.

5. MECHANICAL CHESS USING ARTIFICIAL INTELLIGENCE

Manipal University, Jaipur, India (Jan 2018 – Dec 2019)

Technology: IoT, Raspberry pi, 3D printing - Blender

– Chess played between Human VS computer (like in Harry Potter).

6. UNMANNED AERIAL VEHICLE FOR SURVEILLANCE

Manipal University, Jaipur, India (Jan 2020 – Dec 2021)

Technology: Drone, Raspberrypi, Arducopter, Computer Vision

– Designed Quadcopter for surveillance purposes.

7. SMARTPHONE-BASED SLEEP STAGING USING EEG

Manipal University, Jaipur, India (Jan 2021 – Present)

Technology: Machine Learning, EEG headset, Android App

–Used Machine Learning model to analyse the EEG input.

MORE

AWARDS

OCT 2022 **Young Researcher Award – Research**
Manipal University

SEP 2022 **Top Achiever Award – Research**
Manipal University

DEC 2019 **Best Poster Award for Gait Biometrics**
ICCT *International Conference, Jaipur, India*

DEC 2019 **Best Project Award for AI-Based Chess**
ICCT *International Conference, Jaipur, India*

DEC 2019 **Second Best Project Award for Smart Marker**
ICCT *International Conference, Jaipur, India*

2018 **World Association for Innovative Technology**
IN-TECH **Award For Science & Technology, Zagreb, Croatia**
Best paper award in International Conference

2. Anubha Parashar (2021). Inexpensive Nail-fold Capillaroscopy for Early Detection of Cardio-Metabolic Disease. *Australian patent*, *Status: granted* (2021100922).

3. Anubha Parashar (2021). Content Based Video Ranking. *Australian patent*, *Status: Granted* (2021105538).

4. Anubha Parashar (2021). Sign Language Translator. *Australian patent*, *Status: granted* (202110309).

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JOURNALS - (10)

1. Anubha Parashar, Apoorva Parashar, Shekhawat RS, Ding W, Rida I. (2022). Deep Learning Pipelines for Recognition of Gait Biometrics with Covariates - A Comprehensive Review. *Artificial Intelligence Review.*, *2022* (Q1) SCI, IF – 9.588.

2. Anubha Parashar, Shekhawat RS, Ding W, Rida I. (2022). Intra-class Variations with Deep Learning-based Gait Analysis: A Comprehensive Survey of Covariates and Methods. *Neurocomputing.*, *2022* (Q1) SCI, IF – 5.667.

3. Anubha Parashar, Shekhawat RS, (2022). Protection of gait data set for preserving its privacy in deep learning pipeline *IET Biometrics.*, *2022* (Q2) ESCI, IF – 2.716.

4. Anubha Parashar, Shekhawat RS, (2022). A Robust Covariate-invarient Gait Recognition based on Pose Features *IET Biometrics.*, *2022* (Q2) ESCI, IF – 2.716.

5. Anubha Parashar, et. al. (2016). Push Recovery for Humanoid Robot in Dynamic Environment and Classifying the Data Using K-Mean *International Journal of Interactive Multimedia and Artificial Intelligence.*, *2022* Vol. 4, (pp 29-34) (Q2) ESCI, IF – 4.936.

6. Anubha Parashar, et. al. (2014). Business and Social Behaviour Intelligence Analysis Using PSO *International Journal of Interactive Multimedia and Artificial Intelligence.*, *2022* Vol. 2, (pp 69-74) (Q2) ESCI, IF – 4.936.

MORE

INTERNATIONAL CONFERENCES - (16)

1. Anubha Parashar, Apoorva Parashar, Imad Rida, Vidyadhar Aski. (2022). Protecting the Privacy of Face by De-Identification Pipeline Based on Deep Learning. *16th International Conference on Signal Image Technology & Internet Based Systems.*, *2022* (IEEE), IF – 0.70.

2. Anubha Parashar,Apoorva Parashar, RS Shekhawat, Vidyadhar Aski. Surveillance System To Provide Secured Gait Signatures In Multi View Variations Using Deep Learning. *International Conference on Modelling, Simulation & Intelligent Computing.*, (Scopus) *2020*.

3. Anubha Parashar, A Parashar. Identification of gait data using machine learning technique to categories human locomotion *10th International Conference on Security of Information and Networks (pp 229-234).*, (Scopus) *2017* Tier 3 conference.

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2014 **Gate Scholarship**, Postgraduation Scholarship

ACTIVITIES

1. **Talks in International Workshops and Conferences**

Guest speaker to deliver lectures including labs sessions on IoT, AI, Computer Vision, Biometrics in MNIT Jaipur, Agra University.

2. **Reviewer of Top Journals and International Conferences**

Reviewer of IEEE Transactions on Neural Networks and Learning Systems, Information Sciences, IJIMAI journal, More than 30 International Conferences and hackathons conducted by ACM.

3. **Events**

– Comittee member of more than 30 International Conferenced and Workshops.
– Organized workshop on IoT, Azure, AI, ML, NLP.
– Organized blood donation camp and part of Rotaract Club for 5 consecutive years (2016 — 2019, 2021).

4. **Professional Membership**

IEEE - 93426265. ACM - 9763989. CSI - 2010000571. TheIRED - AM10100057578. CSTA - 300000629. Internet Society - 138776. IAENG - 173727. SCIEI - 201610190002. IEDRC - 90080958.

5. **Hobbies**

Writing Technical Books and Research Articles, Problem Solving, Learning New Technology, Travelling, Soccer.

MORE

BOOK CHAPTERS - (7)

1. Book Title: Autonomous driving and driver assistance system
Anubha Parashar, Apoorva Parashar, Vidyadhar Aski. Vision based Smart Autonomous Vehicle using Deep Learning. *CRC Press, Taylor & Francis Group, USA.*, *2021* (Scopus).

2. Book Title: Cognitive Computing for Human-Robot Interaction: Principles and Practices.
Anubha Parashar, Apoorva parashar. Optimized Navigation using Deep Learning Technique for Automatic Guided Vehicle. *Elsevier, USA (pp - 147-161).*, *2021*.

3. Book Title: Security and Trust Issues in Internet of Things: Blockchain to the rescue.
Anubha Parashar, Apoorva parashar, Vidyadhar Aski, Rajveer S Shekhawat. IoT enabled Surveillance System to Provide Secured Gait Signatures Using Deep Learning. *CRC Press, Taylor & Francis Group, USA.*, *2020*.

4. Book Title: Data Intensive Computing Applications for Big Data.
Anubha Parashar, Apoorva parashar. Big Data Analysis Using Machine Learning Approach to Compute Data. *Advances in Parallel Computing. IOS PRESS.*, *2018*.

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