

Charvi Jain

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EDUCATION

School of Embedded Composite Artificial Intelligence, TU Dresden, Germany

Feb'24-Jan'27

Ph.D, External Systems Biology Knowledge Integration in Large Language Models

Supervisor: Prof. Jens Lehmann (Principal Scientist, Amazon), Prof. Ivo Sbalzarini

TU Dresden, Dresden, Germany

Oct'19-Jan'22

M.Sc. in Computational Modeling and Simulation, CGPA 1.7 / 5.0 (German score, 1.0 / 5.0 highest)

Courses: Machine Learning, Computer Vision, Data Analytics, Knowledge Graphs, Data Visualization

Indian Institute of Information Technology, UNA, HP, India

July'15-May'19

B.Tech in Computer Science and Engineering, CGPA 8.22 / 10

Courses: Machine Learning, Data structures and Algorithms, Database Management Systems

EXPERIENCE

Research Engineer, Fraunhofer IAIS, Dresden, Germany

Jan'22-Jan'24

1. Part of training and evaluation of Generative-AI Language Models up to 7B under OpenGPTX, European project
2. Actively researching approaches for integration of structured knowledge graphs and unstructured text in LLMs
3. Involved in the development of a retrieval-based language model to improve factual correctness

RESEARCH PROJECTS

Chair of Medical Informatics and Biometry, TU Dresden

April'21 -Dec'21

1. Developed a novel technique for the generation of synthetic relational databases for meaningful medical data using Generative Adversarial Networks (GANs) for Master Thesis
2. Directed towards the generation of synthetic data based on two tables
3. Supervised by Prof. Dr. rer. nat. Martin Sedlmayr

ScaDS.AI, Leipzig University, Dresden, Germany

Oct'20-March'21

1. Privacy-preserving prediction of aneurysm rupture based on clinical data using GANs and Differential Privacy
2. Directed towards the generation of synthetic data based on a single table
2. Supervised by Ms. Maja Schneider, Prof. Dr. Erhard Rahm

National Center for Tumor Diseases(NCT), Dresden, Germany

Sept'20-Jan'21

1. Feature Detection and Description in SLAM for minimally invasive surgery (Computer Vision, SLAM, Superpoint, KeyPointN)
2. Supervised by Mr. Reuben Docea

Computer Science Department, NIT Hamirpur, HP, India

Aug'18-March'19

1. Investigated and published a paper on the combination of CNN-LSTM technique for Image Captioning
2. Supervised by Dr. Neha Sharma

INTERNSHIPS

Work-student, Fraunhofer IAIS, Dresden, Germany

May'21-Dec'21

1. Implemented recommender systems based on content-based filtering
2. Supervised by Dr. Diego Collarana

Software Developer, manaTec, Dresden, Germany

Sept'20-Oct'20

1. Mobile Application using Flutter for Android and IOS
2. Supervised by Mr. Robert Dukstein

Work-student, Institute Of Railway Vehicles and Railway Technology, TUD, Germany

Jan'20-Aug'20

1. Augmented Reality and Mobile Application Development using C#, Unity, Vuforia
2. Supervised by DR.-ING. Martin Kache, Karim Benabdellah

Research Intern, Raman Lab, MNIT, Jaipur, India

May'18-Jun'18

1. Investigated and implemented several machine learning algorithms to characterize facial images by eyes and lips into one of six emotions. Paper published at ICRAIE
2. Supervised by Prof. Rajesh Kumar,

PROGRAMMING SKILLS

Python, Pytorch, Bash, Unix/Linux, Git, SLURM, C++, MySQL, Java

Command over working with supercomputers (Taurus - TU Dresden, Juwels Booster-FZJ Jülich)

HACKATHONS

Helmholtz GPU Hackathon, FZJ Jülich

May '23

Investigated efficiency of tensor parallelism in Pytorch 2.0 with regards to FSDP

Game Jam, TU Dresden

Dec '19

SuddenlyAR: Built a quest using Augmented Reality, and received credit for *Best Innovative Team*

Augmented Reality application using Unity, Blender, Vuforia

Hackathon 2.0, National Institute of Technology, Hamirpur

April '17

Easy Outpass RFID Reader, secured *1st* position

Mobile Application using Android, MySql

PUBLICATIONS

[1]. Ali, M., Fromm, M., Thellmann, K., Rutmann, R., Lübbering, M., Leveling, J., Klug, K., Ebert, J., Doll, N., Buschhoff, J. S., **Jain, C.**, Weber, A. A., Jurkschat, L., Abdelwahab, H., John, C., Suarez, P. O., Ostendorff, M., Weinbach, S., Sifa, R., . . . Kesselheim, S. (2023). Tokenizer Choice For LLM Training: Negligible or Crucial? *ArXiv*. /abs/2310.08754. **Accepted at NAACL 2024**

[2]. **Jain, Charvi**, Kshitij Sawant, Mohammed Rehman, and Rajesh Kumar. "Emotion detection and characterization using facial features." In *2018 3rd International conference and workshops on recent advances and innovations in engineering (ICRAIE)*, pp. 1-6. IEEE, 2018.

[3]. **Jain, Charvi**, and Neha Sharma. "Image Captioning Using CNN Long Short-Term Memory Network." In *Proceedings of the International Conference on Advances in Electronics, Electrical & Computational Intelligence (ICAEEC)*. 2019.

[4]. N. Sharma and **C. Jain**, "Characterization of Facial Expression using Deep Neural Networks," *2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS)*, Coimbatore, India, 2019, pp. 492-495, doi: 10.1109/ICACCS.2019.8728386.

[5]. **Jain, Charvi**. "Strengthening of Fingerprint Technology." In *2018 International Conference on Computing, Power and Communication Technologies (GUCON)*, pp. 721-724. IEEE, 2018.

[6]. **Jain, Charvi**, and Diwakar Gautam. "Abnormal behaviour detection at traffic junctions using Lucas Kanade and Harris Corner detector." In *2018 4th International Conference on Recent Advances in Information Technology (RAIT)*, pp. 1-5. IEEE, 2018.

PRESENTATIONS

[7]. Process Automation by Software ROBOTS, National Conference on Process Automation and Control (NCPAC 2016), MNIT, Jaipur, India

[8]. Rain Water Harvesting and Utilization, National Seminar on "Water and Jobs "on "World Water Day-2016", VGU Campus, Jaipur, India

LANGUAGES

English

GRE: 315 (Verbal Reasoning: 150, Quantitative Reasoning: 165)

2019

TOEFL: 100 (Speaking: 25, Listening: 26, Writing: 25, Reading: 24)

2019

German

Goethe B1: Pass (Speaking: 60, Listening: 73, Writing: 81, Reading: 67)

2019

Hindi (Native)

CERTIFICATES

Oracle Database 11g: SQL Fundamentals I, Score 94%	2017
Oracle Certified Professional, JAVA SE 6 Programmer, Score 86%	2017

TRAINING PROGRAMMES

Artificial Intelligence & 5G Communication Technology Short-Term Training Program under AICTE-AQIS	2021
Core Java, C++, organized by Road Ahead Technologies, Jaipur, India	2016
Oracle (SQL), PHP, Android, organized by Road Ahead Technologies, Jaipur, India	2017

WORKSHOPS

Mobile Robotics, TRYST, IIT Delhi	2018
MATLAB, TRYST, IIT Delhi	2018
Raspberry PI and Python-based automation system design, TRYST, IIT Delhi	2018
NVIDIA's latest GPU-accelerated deep learning platforms, Techfest, IIT Bombay	2017
Ethical Hacking, NIT Hamirpur	2016
Game Development using Web Technologies	2015
QUADCOPTER UAV, Robothlon	2015

COVETED AWARDS

Indra Priyadarshini Puruskar, INR 100000.00, US\$ (Approx): \$1538.00	2015
Gargi Award – Balika Prothsahan Puruskar, INR 5000.00, US\$ (Approx): \$76.00 Given by Government of Rajasthan, Jaipur, India	2015
SSTSE Scholar (State Science Talent Search Examination) Organized by Board of Secondary Education, Government of Rajasthan, India	2013

OTHER AWARDS

Virtual-Grace Hopper Conference EMEA 2021 Scholar, AnitaB.org	2021
“Comprehensive Disaster Risk Management Framework” online course Jointly organized by the NIDM, New Delhi & Global Facility for Disaster Reduction and Recovery, Washington DC, USA	2018
Volley Ball Tournament, 2nd position Organized by Inter Technology University Sports Association(ITUSA), National Institute of Technology, Kurukshetra, India	2016