Avani Gupta

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EDUCATION

IIIT HYDERABAD

B.Tech(Hons.) May 2022
CGPA: 8.42
MS by research April 2023
Computer Science

RESEARCH INTERESTS

ML interpretability, Explainability, XAI-based model improvement, Concept-based approaches, Computer Vision, Reinforcement Learning

SKILLS

Programming Languages: Python, C/C++
Libraries: PyTorch, Tensorflow, jax, keras, OpenCV, gym, vowpal-wabbit, RLlib
Applications: Android-Studio, Firebase, Heroku, Git, OpenGL, Matlab, Blender
Environments: Linux, Windows

ACHIEVEMENTS

- **Best Paper Award**, ICVGIP 2022.
- **SemEval 2022,** 10^{th} **rank in Chinese;** 15^{th} **in English and Spanish NER**
- **Rank 14: Amazon ML challenge 2021**
- **Winner, Software edition, Smart India Hackathon, 2020**
- **Winner, Microsoft's Mars Colonization Program, 2020**
- **Microsoft Codess, 2020**

POSITIONS

Teaching Assistant, 2021 TA for course Statistical Methods in AI (SMAI)
AiCrowd Organiser, 2021 Organised ML Battleground at AI Crowd as part of Felicity: Techno-cultural fest of IIIT H. Designed problem statements and generated data.
Workshop Organizer, 2021 ML workshop, took a session on GAN's in Felicity.
Volunteer, NeuRIPS, 2020
Events wing, 2020 Robotics club, IIIT-H

COURSEWORK

Computer Vision, Computer Graphics, Adv. DL, Information-Retrieval and Extraction, Adv. NLP, Optimization Methods, Statistical Methods in AI, Game Theory, Data Analytics, Data-Visualization, DIP, Mobile Robotics, Software Systems, Distributed Systems, Algorithms, Data-Structures, OS, CN, Probability, Linear Algebra, Calculus.

EXPERIENCE

IBM RESEARCH | Intern (areas: NLP, RL, BPM, AI)

May 2021 - August 2021 | Bangalore, India
Built a novel end-to-end system for Goal-Oriented Next Best Action Prediction in Business Processes using Deep Reinforcement Learning. Submitted Paper: Preprint and US. patent (currently in last stage after signing)

TALENTSPRINT | AI ML Mentor

June 2022 - Sept 2022
Mentored working professionals in AI program run by TalentSprint.

CVIT, IIIT H | Researcher (Areas: ML Interpretability, CV)

May 2020 – Present
Working on **ML interpretability** applied in Computer vision and graphics problems. Also worked on **temporal consistency in 3D human reconstruction.**

AI HOME GROUP | Intern (Areas: CV, DIP)

Nov 2020 - April 2021
Worked on VR tour creation system from images taken by smartphone.

MICROSOFT | Mentee (Areas: AI, Algorithms)

June 2020 - July 2020 | Winner all over India among the project work
Worked on Automated mars rover web game which uses shortest path heauristic algorithms. (Jquery, HTML, CSS and javascript) view project

SCRAPSHUT | Intern (Areas: NLP, AI)

Jan 2020 – May 2020 | Hyderabad
Developed web-app for real-time fake news detection. Used Online learning models for prediction, wrote custom web-scraper. (Django, Keras) view project

ROBOTICS RESEARCH CENTER | Intern (Areas: RL, Robotics)

Nov 2019 – Jan 2020 | Hyderabad
Implemented Reinforcement Learning algorithms used in Robotics. (Gym) view project

PUBLICATIONS

Goal-Oriented Next Best Activity Recommendation using Reinforcement Learning (under review)
Interpreting Intrinsic Image Decomposition using Concept Activations | ICVGIP, 2022 (oral, Best paper award)
CitRet: A Hybrid Model for Cited Text Span Retrieval | COLING, 2022
Abstract representation of visual stimuli from neural recordings using deep generative models | Poster, ESI Sync, 2020
Fake News Detection using Deep Learning based Natural Language Processing | Poster, HiPC, 2019

PROJECTS

- **Smart Library Management System | SIH 2020 | Winner all over India**
  End to end Library Management app: auto-tagger for books, recommendation engine, QR based issuing of books, admin dashboard, chatbot. (Flutter, Firebase)
- DataSynth: Customizable synthetic data generation used for training AI models; integrated webapp. (Unity3D, Flask, SwaggerAPI) Devpost submission
- NER | SemEval, 2022. Developed BERT based CRF with BiLSTM models.
- Wikipedia Search Engine: Search using advanced queries on Wikipedia corpus.
- Adversarial Neural Cryptography: LSTM-based encryption. (Tensorflow)
- Stereo reconstruction and Non-linear optimization (Open3D)
- Pose Graph Optimization for SLAM (g2o, jax)
- DHT based DNS: Domain Name System based on Distributed Hash Table. (python)
- Style Transfer: Transfer style of images using auto-encoder. (PyTorch)
- Image Background editing: using poisson matting. (OpenCV)
- Interactive data-visualization: India State-wise factors visualization. (Bokeh)