ARJUN ROY

Machine Learning Researcher

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EXPERIENCE

Researcher on EU Horizon project MAMMOth
Research Institute CODE

📅 June 2023 – Ongoing 📍 Munich, Germany

- Leading efforts to develop fair models by gradient conflict resolution in Multi-task Learning.
- Supervising efforts to develop robust ML models against adversarial attacks and reconstruction attacks.
- Contributing to a team efforts focused on bias identification and mitigation during Multi-modal fusion.

Researcher on Volkswagen Foundation Project BIAS
L3S Research Center

📅 Sept 2019 – May 2023 📍 Hannover, Germany

- Interdisciplinary research, spearheaded the study of ethical algorithm that juxtaposes fair-ML with anti-discrimination laws.
- Addressed technical challenges in fairness-aware learning, focusing on Multiple protected attributes and class-imbalance.
- Introduced student-teacher learning framework for fair-MTL, where an RL agent (teacher) decides optimization objective for a MTL (student) at each training step.

Visiting Researcher
Information Technologies Institute-CERTH

📅 Sept 2022 – Nov 2022 📍 Thessaloniki, Greece

- Worked on the topic of 'Grouping MTLs' using parameter similarity between tasks.

Research Intern
L3S Research Center

📅 Sept 2018 – March 2019 📍 Hannover, Germany

- Under prestigious DAAD scholarship, as part of my Master's (MTech) thesis work, developed a pipeline based solution for 'Stance detection' in news headlines.
- The research played a pivotal role in shaping up my master's thesis, aimed at automated 'Fake news detection', where stances of related articles where used to examine veracity of a given news.

STRENGTHS

Hard-working   Mentally & Physically strong
Creative & Innovator   Leader   Good Communicator

LIFE PHILOSOPHY

"Creativity is intelligence having fun!" - *Albert Einstein*

EDUCATION

Ph.D. in Computer Science
Freie Universität Berlin

📅 Nov 2021 - Ongoing 📍 Berlin, Germany

M.Tech. in Math. & Computing
IIT Patna, 9.16/10 CPI (Summa cum laude)

📅 Aug 2017 - July 2019 📍 Patna, India

Masters in Computer Application
IGNOU, 62.14/100 % (Magna cum laude)

📅 Oct 2013 - Dec 2016 📍 Kolkata, India

MOST PROUD OF

🏆 **Awards I received**
i) DAAD scholarship for Master's thesis, ii) Graduate Aptitude Test in Engineering (GATE) top 3% rank in India

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💗 **Persistence & Loyalty**
I relocated to three different cities to work closely with my Ph.D. supervisor.
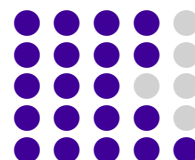

📈 **Leadership ability**
served as the post graduate representative at IITP, and as Vice President of Indian diaspora, Hannover.
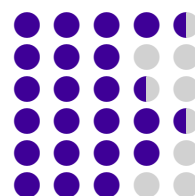
TECHNICAL SKILLS

Professional

Coding
Debugging
DBMS
Documenting
Presentation

Programming

Python
C,C++
SQL
Pytorch
Keras
Tensorflow

PUBLICATIONS

Total citations: 504 (till last update)

- E. Panagiotou, A. Roy, and E. Ntoutsi, "Synthetic tabular data generation for class imbalance and fairness: A comparative study," *arXiv preprint arXiv:2409.05215*, 2024.

- C. K. Ramanaik, A. Roy, and E. Ntoutsi, "Adversarial robustness of vaes across intersectional subgroups," *arXiv preprint*, 2024.

- A. Roy, C. Koutlis, S. Papadopoulos, and E. Ntoutsi, "Fairbranch: Mitigating bias transfer in fair multi-task learning," in *IEEE-IJCNN*, 2024.

- S. Swati, A. Roy, and E. Ntoutsi, "Exploring fusion techniques in multimodal ai-based recruitment: Insights from faircvdb," in *EWAF*, 2024.

- A. Roy, J. Horstmann, and E. Ntoutsi, "Multi-dimensional discrimination in law and machine learning-a comparative overview," in *ACM-FAccT*, 2023.

- V. Iosifidis, A. Roy, and E. Ntoutsi, "Parity-based cumulative fairness-aware boosting," *KAIS*, 2022.

- T. Le Quy, A. Roy, V. Iosifidis, W. Zhang, and E. Ntoutsi, "A survey on datasets for fairness-aware machine learning," *Wiley: DMKDD*, 2022.

- A. Roy, P. Fafalios, A. Ekbal, X. Zhu, and S. Dietze, "Exploiting stance hierarchies for cost-sensitive stance detection of web documents," *JIIS*, 2022.

- A. Roy, V. Iosifidis, and E. Ntoutsi, "Multi-fairness under class-imbalance," in *Discovery Science*, Springer, 2022.

- A. Roy and E. Ntoutsi, "Learning to teach fairness-aware deep multi-task learning," in *ECML-PKDD*, 2022.

- T. Le Quy, A. Roy, G. Friege, and E. Ntoutsi, "Fair-capacitated clustering.," in *EDM*, 2021.

- A. Roy and A. Ekbal, "Mulcob-mulfav: Multimodal content based multilingual fact verification," in *IEEE-IJCNN)*, IEEE, 2021.

- A. Roy, K. Basak, A. Ekbal, and P. Bhattacharyya, "A deep ensemble framework for fake news detection and multi-class classification of short political statements," in *ICNLP*, 2019.

- A. Roy, P. Kapil, K. Basak, and A. Ekbal, "An ensemble approach for aggression identification in english and hindi text," in *TRAC Workshop*, 2018.

LANGUAGES

English ●●●●○
German ●◐○○○

REFEREES

Prof. Eirini Ntoutsi
@ Universität der Bundeswehr München
✉ eirini.ntoutsi@unibw.de
🌐 aiml-research.github.io

Working under her supervision for my Ph.D. on the topic Multi-criteria of fairness-aware Machine Learning

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Prof. Asif Ekbal
@ IIT Jodhpur
✉ asif@iitj.ac.in
🌐 ekbalasif.github.io

Worked under his guidance for my M.Tech. thesis on the topic Fake-news Detection.

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