

# Ashrya Agrawal

(+91) 9411775699 | [ashryaagr@gmail.com](mailto:ashryaagr@gmail.com) | [www.ashrya.in](http://www.ashrya.in) | [ashryaagr](https://github.com/ashryaagr) | [ashryaagr](https://www.linkedin.com/in/ashryaagr)

## Education

### Bachelor of Engineering, BITS Pilani, Pilani Campus

CGPA: 9.264/10.0

MAJOR: **COMPUTER SCIENCE** (MINOR IN *Data Science*)

Aug 2018 - May 2022 (Expected)

- **Relevant Courses:** Artificial Intelligence, Foundations of Data Science, Applied Statistical Methods, Data Structures and Algorithms, Probability & Statistics, Differential Equations, Object Oriented Programming, Disc. Structures in CS, Machine Learning, Optimization

## Skills

**Research Interests** Algorithmic Fairness, Causality, Generalization, Video Captioning

**Languages** Python, Julia, C++, C, Java, Javascript

**Frameworks** Pytorch, OpenCV, Tensorflow, Keras, OpenAI-Gym, DeepMind Control Suite, NodeJS, Flask

## Experience

### JP Morgan Chase & Co.

Bangalore, India

DATA SCIENCE INTERN · CIB RESEARCH & ANALYTICS PROGRAM

January 2022 - Present

- Working with the Corporate Investment Banking Data science team to optimize the corporate workflows using Data Science and NLP.

### Research Collaboration

WITH **DR. JIAHAO CHEN** (CTO · PARITY AI) AND **DR. SEBASTIAN VOLLMER** (PROF · TU KAISERSLAUTERN, GERMANY)

May 2020 - Dec 2021

- Used causality to identify failure modes of debiasing algorithms and explained those failures using Information theory.
- Benchmarked fairness algorithms on 9 datasets and demonstrated practical considerations like generalization error.
- Worked on proof of impossibility results using Fairness-Tensor framework.
- Performed mathematical analysis of bias-variance-noise decomposition for naïve post-processing to supplement empirical results.
- Developed [\[Fairness.jl\]](#), a comprehensive toolkit in Julia for bias audit and mitigation, funded by JuliaComputing.

### Advanced Data Analytics and Parallel Technologies Lab, BITS Pilani

Pilani, India

RESEARCH ASSISTANT · ADVISED BY **PROF. NAVNEET GOYAL** AND **PROF. POONAM GOYAL** · [\[REPORT\]](#)

January 2020 - May 2021

- Developed encoder and decoder architectures for knowledge insertion in Video Captioning models.
- Demonstrated higher semantic consistency and improved CIDEr by 5.77 on MSVD and by 0.63 on MSRVT over the baseline.
- Used GCNs and various Spatio-Temporal and Reinforcement Learning methods for performance improvements.
- Leveraged advancements in attention architectures for knowledge selection.

### Wipro Ltd.

Bangalore, India

ML INTERN · [\[CODE\]](#)

May 2020 - June 2020

- Worked on automatic FAQ-answering system to improve response time for queries by employees.
- Fine-tuned BERT and computed feature representation using the fine-tuned BERT model

### Computer Science Department BITS Pilani

Pilani, India

TEACHING ASSISTANT

Aug 2019 - Dec 2019, Jan 2021 - May 2021

- Conducted 10+ tutorial sessions with 40+ freshmen, introducing them to C programming & assisted in grading and conducting exams.
- Taught practical aspects of Data Structures & Algorithms and conducted 10+ lab sessions for 50+ students.

## Publications

**Ashrya Agrawal**, Florian Pfisterer, Bernd Bischl, Francois Buet-Golfouse, Srijan Sood, Jiahao Chen, Sameena Shah, Sebastian Vollmer. (2021). Debiasing classifiers: is reality at variance with expectation?. <https://arxiv.org/abs/2011.02407> (under review)

**Ashrya Agrawal**, Florian Pfisterer, Jiahao Chen, Sebastian Vollmer. (2021). Debiasing Through a Causal Lens. (under review)

## Academic Projects

**Friend Affinity Finder** Created a Friend Affinity Finder that performs NLP analysis of the social media profiles of friends, generates affinity score for friends and clusters them. [\[code\]](#)

**Voice assistant for Alzheimer patients** Developed a voice assistant with automatic Object Detection to aid navigation, memory issues for Alzheimer patients using ResNet, cloud, NodeJS, etc. Helps patients by locating objects misplaced or forgotten by patient.

[\[Model\]](#) · [\[Backend\]](#)

**Compiler with native support for Jagged Arrays** Built a compiler in C, supporting various data-types, arrays, expressions and specifically jagged arrays. Implemented lexical analyser, parser, abstract syntax tree generator and type checker. [\[code\]](#)

## Achievements

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2019	<b>National Winner</b> , Hackathon - IBM Hack Challenge	<i>Bangalore, India</i>
2018	<b>99.94 percentile</b> , JEE Mains while competing with 1 Million students.	<i>Delhi India</i>
2018	<b>National top 1 %</b> , National Standard Examination in Physics and National Standard Examination in Chemistry	<i>Delhi, India</i>
2018	<b>KVPY Fellowship - SX</b> , Dept. of Science and Technology - Govt. of India and IISC Bangalore. Secured <b>All India Rank 182</b> while competing with about 60,000 other students.	<i>Delhi, India</i>
2017	<b>KVPY Fellowship - SA</b> , by Dept. of Science and Technology - Govt. of India and IISC Bangalore. Secured <b>All India Rank 685</b> while competing with 50,000 other students.	<i>Delhi, India</i>

## Talks & Presentations

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<b>JuliaCon · Lightning talk on Bias audit and mitigation</b> <a href="#">VIDEO</a> , <a href="#">SLIDES</a> , <a href="#">WEBPAGE</a>	<i>Virtual Conference</i> July 2021
<b>Rainbow DQN · DAISY Reading Group</b> <a href="#">SESSION 1</a> , <a href="#">SESSION 2</a> , <a href="#">SLIDES</a>	<i>BITS Pilani</i> Aug 2020
<b>Python ACM SIG Lecture</b> <a href="#">WEBPAGE</a>	<i>BITS Pilani</i> Aug 2019
• Delivered hands-on python programming tutorial to 200+ students.	

## Volunteer Work

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<b>Volunteer and Panelist</b> INTERNATIONAL CONFERENCE ON MACHINE LEARNING (ICML) 2021	<i>Virtual Conference</i> July 2021
• Panelist for social session on Open Collaboration in ML Research	
• Received D&I Fellowship for ICML	
• Assisted in managing social events and debates	
<b>Core Team Member</b> ASSOCIATION FOR COMPUTING MACHINERY, BITS PILANI - STUDENT CHAPTER	<i>Pilani</i> Aug 2018 - Present
• Delivered hands-on <a href="#">sessions</a> of programming to unprivileged high school children.	
• Delivered Lectures on Prototype development, Introduction to Python Programming	
• Developed Backend for Checkmate 2019, a bi-annual puzzle-based event. <a href="#">[code]</a> · <a href="#">[demo]</a>	

## References

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<b>Dr. Jiahao Chen</b> CTO · PARITY AI	<i>Research Collaborator and Mentor</i> <a href="mailto:jiahao@getparity.ai">jiahao@getparity.ai</a>
<b>Prof. Sebastian Vollmer</b> PROFESSOR · DEPARTMENT OF COMPUTER SCIENCE, TU KAISERSLAUTERN, GERMANY	<i>Research Collaborator and Mentor</i> <a href="mailto:sebastian.vollmer@dfki.de">sebastian.vollmer@dfki.de</a>
<b>Prof. Navneet Goyal</b> PROFESSOR · CS DEPARTMENT BITS PILANI, INDIA	<i>Former Advisor at ADAPT Lab and Course Instructor</i> <a href="mailto:goel@pilani.bits-pilani.ac.in">goel@pilani.bits-pilani.ac.in</a>
<b>Prof. Poonam Goyal</b> PROFESSOR · CS DEPARTMENT BITS PILANI, INDIA	<i>Former Advisor at ADAPT Lab</i> <a href="mailto:poonam@pilani.bits-pilani.ac.in">poonam@pilani.bits-pilani.ac.in</a>