

# ARJUN AGARWAL

ML Researcher Building Practical Intelligence

@ arjunagarwal899@gmail.com

in arjunagarwal899

www.agarwalarjun.com

## WORK EXPERIENCE

### Qure.AI

Senior AI Scientist

Apr 2024 - Present

AI Scientist

Jul'22 - Mar'24 1 year 9 months

AI Scientist Intern

Jul 2021 - Jun 2022 1 year

- Scaled stroke-triage and lung-cancer products from R&D to FDA-cleared deployments in 10+ countries
- Led the **Stroke & Trauma Intelligence (qER)** program from **novice hire to R&D lead**, spanning triage models (**AUC 0.85–0.98, DSC 0.30–0.95, ↓ 36% MAE**) to published treatment recommendation systems, built on **140k** weakly annotated datapoints and **10k** radiologist-labeled scans, increasing patient referrals to specialized treatment centers by **~30%** (estimated).
- Transplanted the toolkit to the **Lung Cancer AI platform (qCT)**: raised AUCs (**specificity ↑ 0.1–0.2 @ same sensitivity**) on **22k** pulmonary nodules, built a ranking engine (**NDCG@5 0.92**), prototyped DETR with custom 3D mAP/mAR metrics. Currently supervising three scientists and three data engineers while leading research into multimodal malignancy scoring (CT, PET, biopsy, reports, EHR).
- Built future-facing research assets: a **CT-native foundation encoder** (SwinV2-3D/MaxViT + Sim-MIM + MedCLIP) with memory-aware training that boosts downstream qER models (**AUC +0.02, DSC +0.07**); physics-grounded synthesis that expanded scarce cohorts by **80%**; a hierarchical NVAE (**SSIM 0.96/PSNR 36**) feeding latent diffusion studies; and the '**vision\_architectures**' library that standardizes 3D backbones with activation-checkpointing toggles, tensor-splitting parallelism, EMA students, diffusion schedulers, etc., adopted by CT R&D.
- Collaborated with the regulatory and clinical research teams: led the fastest **FDA 510(k) (3.5 months)**, fronted CE/MDR/MDSAP filings, co-authored papers/conference proceedings across qER and qCT pathways, and hold U.S./India patents on CTA automation.
- Ran **data, tooling, and production** infrastructure: governed 30+ TB multimodal datasets with Postgres/Mongo lineage, safetensor caching (**↓ 80% access latency**), NLP/LLM report parsing and annotation automation, that drove a **3x** normalized annotation-throughput gain; architected a custom process-graph pipeline with TorchScript and nested Pydantic configs, >2k pytest cases (coverage **22%→91%**), cut turnaround **57%**, slashed integration from **8 to 1 day**, and eliminated config-driven incidents across on-prem/cloud/hybrid deployments.

### ReeBorn TotalHealth

Co-founder

Aug 2021 - Jun 2022 11 months

- Reversed chronic illnesses such as diabetes, hypertension and obesity using artificial intelligence
- Leveraged data collected from wearables and other devices, the current lifestyle of the customer, and preferred food choices, to generate an optimal diet and exercise regimen capable of reversing chronic illnesses and remove their dependency on drugs.

### Aditya Jyot Eye Hospital

Research Intern

May 2019 - Jul 2019 3 months

- Conducted research on the impact of diabetic retinopathy on the QoL of the patient and carer
- Designed a research pipeline involving a self-built questionnaire vetted by ophthalmologists
- Analyzed 115 data points collected from all over Mumbai using a *multi-regression model*
- Findings submitted to the Ministry of Health and Family Welfare, India

### TATA Power

Digitization Intern

Jun 2018 - Jul 2018 2 months

- Identified and classified faults in solar farms using thermal images taken by overflying UAVs
- Designed a solution to monitor the health of certain plant equipment using sensor feedback
- Used Arduino UNO, ESP8266 and sensors to implement a prototype of the monitoring solution

## EDUCATION

### Stanford Center for Professional Development, Stanford University

#### Reinforcement Learning

- Grade : A

Jan 2023 - Apr 2023

### Birla Institute of Technology & Science, Pilani (BITS Pilani) - Goa Campus

#### Master of Science, Economics

2017 - 2022

#### Bachelor of Engineering, Computer Science

2017 - 2022

- Computer Science Major GPA : 9.31 / 10
- Overall GPA : 8.67 / 10

## PATENTS & PUBLICATIONS

### Patents

- Agarwal, A., Kumar, S., Golla, S., Tanamala, S., Putha, P., Chilamkurthy, S., Warier, P. (2024). A System and Method for detecting large vessel occlusion (LVO) on a computational Tomography angiogram (CTA) automatically. *U.S. Patent 11967079*. Granted on 23rd Apr 2024. *India Patent 563364*. Granted on 25th Mar 2025

### Publications

- Agarwal, A., Bharti, N., Ghosh, T., Golla, S., Bains, N.K., Chamadia, R., Robert, D., Putha, P., Qureshi, A.I. (2025). Development and internal validation of multimodal machine learning models for predicting eligibility for mechanical thrombectomy in suspected stroke patients using routinely collected clinical and imaging data. *PLOS One*, 20(10): e0334242. doi: 10.1371/journal.pone.0334242
- Kumar, S., Agarwal, A., Golla, S., Tanamala, S., Upadhyay, U., Chattoraj, S., Putha, P., Chilamkurthy, S. (2023). Mind the Clot: Automated LVO Detection on CTA using Deep Learning. *IEEE/CVF International Conference on Computer Vision Workshops (ICCVW), Paris, France*, 2023, pp. 2495–2504. doi: 10.1109/ICCVW60793.2023.00264
- Govindrajan, A., Agarwal, A., Chattoraj, S., Robert, D., Golla, S., Upadhyay, U., Tanamala, S., Govindrajan, A. (2023). Identification of Hemorrhage and Infarct Lesions on Brain CT Images using Deep Learning. *arXiv* 2307.04425. doi: arXiv.2307.04425
- Louis, J., Agarwal, A., Mondal, S., and Talukdar, I. (2021). A global analysis on the differential regulation of RNA binding proteins (RBPs) by TNF- $\alpha$  as potential modulators of metabolic syndromes. *BBA Advances*, 100037. doi: 10.1016/j.bbadv.2021.100037
- Louis, J., Agarwal, A., Aduri, R., and Talukdar, I. (2021). Global analysis of RNA–protein interactions in TNF- $\alpha$  induced alternative splicing in metabolic disorders. *FEBS Letters* 595(4), pp.476–490. doi: 10.1002/1873-3468.14029

- Mishra, B., Raghuraman, R., Agarwal, A., and Aduri, R. (2019). Finding small molecules with pan-serotype activity to target Dengue non-structural protein 1. *VirusDisease* 30, pp.477–489. doi: 10.1007/s13337-019-00561-2

## Conferences

- Agarwal, A., Bharti, N., Ghosh, T., Golla, S., Bains, N., Chamadia, R., Putha, P., Qureshi, A. (2024). Streamlining assessment of Mechanical Thrombectomy eligibility in Acute Stroke: An AI Approach using NCCT and CTA. *International Journal of Stroke, World Stroke Congress*. doi: Accepted. Publication in Oct 2024
- Agarwal, A., Upadhyay, U., Golla, S., Putha, P., Tarpley, J. (2023). Using AI to quantify Gaze Deviation on NCCT scans to predict Large Vessel Occlusion in stroke patients. *International Journal of Stroke, World Stroke Congress*, EP717 / #2597. doi: 10.1177/17474930231192010
- Agarwal, A., Upadhyay, U., Golla, S., Kumar, S. (2023). Application of AI for Infarct Detection on non-contrast CT scans and its efficacy in predicting Large Vessel Occlusions in Stroke cases. *International Journal of Stroke, World Stroke Congress*, O090 / #2079. doi: 10.1177/17474930231192010
- Upadhyay, U., Agarwal, A., Golla, S., Tanamala, S., Putha, P., Chilamkurthy, S. (2023). Volumetric Estimation of Infarct on NCCT – An AI Based Technique. *British Institute of Radiology AI Annual Conference*
- Kumar, S., Agarwal, A., Tanamala, S., Golla, S., Putha, P., Upadhyay, U., Chilamkurthy, S., Pandian, J. (2022). Deep Learning based LVO detection on CT Angiography of Brain. *International Journal of Stroke, World Stroke Congress*. doi: 10.1177/17474930221125973
- Kumar, S., Agarwal, A., Tanamala, S., Golla, S., Putha, P., Upadhyay, U., Chilamkurthy, S., Pandian, J. (2022). Deep Learning Guided Extraction of the Brain's Vascular Territories on CT Angiography. *American Society of Functional Neuroradiology*
- Agarwal, A., Singhal, S., Golla, S., Tanamala, S., Chilamkurthy, S., Pandian, J. (2022). AI-guided Infarct Detection on MRI DWI. *Indian National Stroke Conference*

## RESEARCH EXPERIENCE

<p><b>Department of Biological Sciences</b>  <b>Prof. Indrani Talukdar</b>  <b>Prof. Raviprasad Aduri</b>  Assistant Professors  <span style="font-size: small;">Nov'18 - Jul'21</span> <span style="font-size: small;">2 years 9 months</span></p>	<ul style="list-style-type: none"> <li>Studied RNA-protein interactions to find a cure for metabolic disorders like diabetes and obesity</li> <li>Used web scraping (<i>BeautifulSoup</i>) to obtain RNA sequences and RNA-protein interaction data</li> <li>Applied machine learning and data mining techniques to identify hotspots in RNA sequences</li> <li>Resulted in a publication in <i>FEBS Letters</i> as first author</li> <li>Resulted in a publication in <i>BBA Advances</i> as second author</li> </ul>
<p><b>Department of Biological Sciences</b>  <b>Prof. Raviprasad Aduri</b>  Assistant Professor  <span style="font-size: small;">Aug'18 - Dec'19</span> <span style="font-size: small;">1 year 5 months</span></p>	<ul style="list-style-type: none"> <li>Studied interactions between the dengue virus and small molecules to find a universal treatment</li> <li>Devised a scoring system to prioritize the order of ligand datasets for efficient experimentation</li> <li>Performed ADMET analysis, drug scoring, and virtual screening of selected drug molecules</li> <li>Resulted in a publication in <i>VirusDisease</i> as second author</li> </ul>
<p><b>Aditya Jyot Eye Hospital</b>  <b>Dr. Radhika Krishnan</b>  Medical Director  <span style="font-size: small;">May'19 - Jul'19</span> <span style="font-size: small;">3 months</span></p>	<ul style="list-style-type: none"> <li>Conducted research on the impact of diabetic retinopathy on the quality of life of patients and caregivers</li> <li>Designed a research pipeline involving a self-built questionnaire vetted by ophthalmologists</li> <li>Analyzed 115 data points collected across Mumbai using a multi-regression model</li> <li>Findings submitted to the Ministry of Health and Family Welfare, India</li> </ul>

## TEACHING EXPERIENCE

<p><b>Artificial Intelligence</b>  Course Mentor  <span style="font-size: small;">Jan 2021 - Jun 2021</span> <span style="font-size: small;">6 months</span></p>	<ul style="list-style-type: none"> <li>Designed and evaluated a project assignment on first order logic for approximately 100 students</li> <li>Conducted tutorials on Python so students gained hands-on AI experience</li> <li>Organized doubt-clearing sessions and clarified concepts for students struggling with coursework</li> </ul>
<p><b>Microprocessors &amp; Interfacing</b>  Teaching Assistant  <span style="font-size: small;">Jan 2021 - Jun 2021</span> <span style="font-size: small;">6 months</span></p>	<ul style="list-style-type: none"> <li>Tutored students on memory and I/O interfacing, segmentation, paging, and interrupts</li> <li>Taught x86 assembly programming concepts for the Intel 80X86 series</li> <li>Designed and invigilated weekly labs for roughly 250 students across two sections</li> </ul>
<p><b>Computer Programming</b>  Teaching Assistant  <span style="font-size: small;">Jan 2020 - Jun 2020</span> <span style="font-size: small;">6 months</span></p>	<ul style="list-style-type: none"> <li>Coached a batch of 900+ students being introduced to C programming for the first time</li> <li>Assisted professors with organizing and managing weekly lab sessions for approximately 250 students</li> <li>Held recurring doubt-clearing sessions for students aiming to excel in programming</li> </ul>

## HONORS & AWARDS

 <b>Excellent Performance</b> Artificial Intelligence <span style="font-size: small;">Course Mentor</span>	 <b>Excellent Performance</b> Computer Programming <span style="font-size: small;">Teaching Assistant</span>	 <b>Excellent Performance</b> Microprocessors & Interfacing <span style="font-size: small;">Teaching Assistant</span>
 <b>Top 1% in State</b> Class 12th Exam <span style="font-size: small;">Maharashtra State Board (HSC)</span>	 <b>Gold Medalist</b> All India Rank 2291 <span style="font-size: small;">7th National Cyber Olympiad</span>	 <b>Top 5% in India</b> Mathematics IAIS <span style="font-size: small;">University of New South Wales (Macmillan)</span>

## TECHNICAL SKILLS

<p><b>Programming Languages</b></p> <div style="display: flex; justify-content: space-around;"> <span>Python</span> <span>C++</span> <span>Java</span> <span>C</span> <span>VBA</span> </div> <p><b>Data Science</b></p> <div style="display: flex; justify-content: space-around;"> <span>PyTorch</span> <span>Lightning</span> <span>NumPy</span> </div> <div style="display: flex; justify-content: space-around;"> <span>Pandas</span> <span>Matplotlib</span> <span>Tensorflow</span> </div>	<p><b>Web Development</b></p> <div style="display: flex; justify-content: space-around;"> <span>React</span> <span>Redux</span> <span>Django</span> <span>HTML</span> </div> <div style="display: flex; justify-content: space-around;"> <span>CSS</span> <span>BeautifulSoup</span> </div> <p><b>Cloud and Distributed Computing</b></p> <div style="display: flex; justify-content: space-around;"> <span>AWS</span> <span>GCP</span> <span>Docker</span> <span>Kubernetes</span> </div>	<p><b>Other Tools</b></p> <div style="display: flex; justify-content: space-around;"> <span>Git</span> <span>LaTeX</span> <span>MySQL</span> <span>MongoDB</span> </div> <div style="display: flex; justify-content: space-around;"> <span>Verilog</span> <span>AutoCAD</span> <span>Photoshop</span> </div> <div style="display: flex; justify-content: space-around;"> <span>Maya</span> <span>Jupyter</span> <span>Bash</span> <span>Openpyxl</span> </div> <div style="display: flex; justify-content: space-around;"> <span>MS Office VBA</span> </div>
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## CERTIFICATIONS

*Stanford Center for Health Education*  
**AI in Healthcare (Specialization)**

Prof. Laurence Baker  
Prof. Nigam Shah  
Prof. Serena Yeung  
Prof. Matthew Lungren  
Grade achieved: 100%

Courses:

- Introduction to Healthcare
- Introduction to Clinical Data
- Fundamentals of Machine Learning for Healthcare
- Evaluations of AI Applications in Healthcare
- AI in Healthcare Capstone

*Stanford Online*  
**Machine Learning**  
*DeepLearning.AI*  
**Deep Learning (Specialization)**

Prof. Andrew Ng  
Grade achieved: 100%

- Machine Learning

- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Structuring Machine Learning Projects
- Convolutional Neural Networks
- Sequence Models

*Udacity*  
**Mastering NLP (Nanodegree)**  
Dr. Luis Serrano, Dr. Jay Alammar

*Stanford Online*  
**Algorithms (Specialization)**  
Prof. Tim Roughgarden  
Grade achieved: 91.9%

- Introduction to Natural Language Processing
- Computing with Natural Language
- Communicating with Natural Language

- Divide and Conquer, Sorting and Searching, and Randomized Algorithms
- Graph Search, Shortest Paths, and Data Structures
- Greedy Algorithms, Minimum Spanning Trees, and Dynamic Programming
- Shortest Paths Revisited, NP-Complete Problems and What To Do About Them

*DeepLearning.AI*  
**Tensorflow in Practice (Specialization)**  
Prof. Laurence Moroney  
Grade achieved: 100%

- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning
- Convolutional Neural Networks in TensorFlow
- Natural Language Processing in TensorFlow
- Sequences, Time Series and Prediction

*Google Cloud*  
**Architecting with Google Compute Engine (Specialization)**  
Philipp Maier, Brian Rice  
Grade achieved: 99.3%

- Google Cloud Platform Fundamentals: Core Infrastructure
- Essential Google Cloud Infrastructure: Foundation
- Essential Google Cloud Infrastructure: Core Services
- Elastic Google Cloud Infrastructure: Scaling and Automation
- Reliable Google Cloud Infrastructure: Design and Process

## POSITIONS OF RESPONSIBILITY

**WAVES (3-day Cultural Festival Coordinator)**  
Department of Arts & Decoration

Apr 2019 - Apr 2020 1 year

- Led the décor vision for the 180-acre BITS Goa campus, including theming and ambience
- Directed 80+ members across 11 teams delivering large-scale installations and new designs
- Planned and managed a budget of over ₹1.7L while organizing inventory and procurement
- Used Adobe Photoshop, Tamasoft Pepakura, and Autodesk Maya to plan designs

**BITS Pilani Peer Mentor**  
Peer Mentorship Program

May 2018 - May 2019 1 year

- Mentored 10 first-year students as they transitioned to college life
- Helped mentees master coursework, prepare for exams, and achieve better grades
- Connected mentees with peers sharing similar interests and hobbies
- Encouraged participation in events, competitions, and campus clubs