Dennis Robert, M.B.B.S., M.M.S.T.

Bangalore, India +91-9611981003 | drobert@deloitte.com
LinkedIn Medium GitHub Google Scholar

SUMMARY

Profile

- **Physician Data Scientist** with 10+ years of experience in Healthcare Data Science industry.
- **MBBS** (Bachelor of Medicine and Surgery) graduate with a **post-graduation (MMST**; Masters in Medical Science and Technology) focusing on **Biostatistics and Computational Epidemiology**.
- Expertise in **study protocol development, statistical analysis plan development (SAP), statistical analysis, reporting and publications of research studies in Medical AI evaluation and Real-World Data (RWD).**
- Skilled in leading all activities pertaining to **clinical development of Medical AI SaMD tools, performing RWD statistical analysis (descriptive and inferential/comparative studies)** and in training and validation of classical machine learning algorithms
- Experience working with RWD data sources such as healthcare claims (IBM MarketScan, Optum Clinformatics, Medicare), EHR databases (CPRD) and OMOP CDM
- **Author and maintainer of two R packages in CRAN** with more than 20,000 downloads as of November 2025.
- **Published more than 30 peer-reviewed journal research articles, conference abstracts -** Google Scholar
- Designed, analyzed & reported clinical research studies (clinical trials) that lead to multiple FDA 510(k) (both CADt and CADe) clearances for AI-based Medical Imaging AI SaMD tools.
- **Primary areas of expertise**
    - Clinical development of Medical AI diagnostic decision support algorithms
    - RWD study design and statistical analysis
    - R programming

Medical AI/ML Experience

Clinical development and postmarketing (post regulatory clearance) studies

- Study protocol, statistical analysis plan (SAP), analysis and reporting for AI/ML CAD validation studies.
- Standalone diagnostic accuracy studies, multi-reader multi-case (MRMC) studies, non-interventional studies.
- Author and maintainer of MRMCsamplesize – R package to estimate sample sizes for MRMC studies.

Pre-clinical development (AI model development)

- Experienced in classical and deep learning-based AI/ML model development

RWD Experience

- Cohort building, incidence & prevalence studies, treatment journey, line of therapy derivation
- **Biostatistics**: Propensity matching, regression, survival analysis.
- **Machine learning**: Prediction models based on classical and deep learning AI/ML models.
- Author and maintainer of autoCovariateSelection – R package to implement automated covariate selection for high-dimensional propensity score (HDPS) matching in RWD data.

Programming Experience

- R (Expert)
- Python (Project Experience)
- SQL (Exposure)
- SAS (Exposure)

Major Academic Achievements

- Khorana Scholarship
- Kerala State Rank 4 and AIR 144 for All India Pre-Medical Entrance Examination (AIPMT, currently known as NEET)

EDUCATION

IIT Kharagpur — **Kharagpur, India**
MMST – Masters in Medical Science and Technology — Graduation: July 2014
Relevant Coursework: Programming and Data Structures, Biostatistics, Pattern Recognition, Epidemiology

Government Medical College Kottayam — **Kottayam, India**
MBBS – Bachelor of Medicine and Bachelor of Surgery — Graduation: February 2010
Relevant Coursework: Clinical Medicine, Surgery, Pre- and Para-clinical subjects

SKILLS

Biostatistics
- Statistical Analysis Plan (SAP) development
- Diagnostic accuracy, MRMC study analysis
- RWD Comparative Effectiveness Research
- Survival (Time-to-event) analysis

Deep Learning/Classical ML
(Training data type: Structured clinical data)
- Logistic and regularized regression methods
- Random forests, GBM
- Feed-forward NNs, RNN, LSTM, CNN

Technical/Programming
- R (Expert)
- Python/PyTorch (Project Experience)
- Impala/SQL (Exposure)
- SAS (Exposure)

Functional
- Medical domain knowledge
- RWD sources: TRUVEN, OPTUM, CPRD, OMOP CDM
- Medical Ontologies: ICD, NDC, HCPCS, etc.

Epidemiology
- Clinical research study protocol design
- Scientific manuscript writing for peer-reviewed publication

Soft Skills
- Collaborative ways of working with multi-disciplinary cross-functional teams
- Delivering scientific presentations

PROFESSIONAL EXPERIENCE

Deloitte — **Bangalore, India**
Manager — Nov 2025 - Present
- Functional manager for a project on RWD cohort building using plain language prompts based on GenAI.
- GenAI-based authoring of "first draft" of clinical trial study protocol and statistical analysis plan for drug trials.

Qure.ai — **Bangalore, India**
Director of Clinical Research — Apr 2024 – Nov 2025
Senior Clinical Research Scientist — Aug 2022 – Mar 2024
Clinical Research Scientist — Jun 2021 – Nov 2021
- Overall supervision of AI CAD clinical research scientific activities including people management.
- Design and analysis of Multi-Reader Multi-Case (MRMC) studies, standalone diagnostic accuracy studies, prospective cohort, case-control studies for Medical Imaging AI CAD evaluation.
- Designed, analyzed, and reported clinical research studies that led to four FDA 510(k) clearances - K212690, K240740, K231805, K231149.
- Published more than 10 scientific peer reviewed original research articles in peer reviewed journals.
- Authored more than 15 conference abstracts which were presented (oral/poster presentation) in various conferences.
- Stakeholder engagement during conceptualization, execution, analysis, and reporting of research studies.
- Scientific review of manuscripts from external research groups investigating Qure's Medical AI/ML algorithms.
- Experienced in working with multi-modal prediction models using imaging and clinical data.

GlaxoSmithKline (GSK) **Bangalore, India**
RWD Manager Nov 2021 – Aug 2022

- Led a 5-member team of RWD (Real-World-Data) SAS Programmers, senior data scientists, and a clinical coder.
- Mentored team members from a scientific point of view and carried out their performance management.
- Reviewed study protocols and SAPs from internal stakeholders for seamless project execution.
- Delivered over 30 RWD study results using RWD sources such as TRUVEN, OPTUM, and CPRD.

Deloitte **Bangalore, India**
Senior Clinical Data Scientist II Sep 2019 – Jun 2021
Senior Clinical Data Scientist I Sep 2017 – Aug 2019
Clinical Data Scientist Nov 2015 – Aug 2017

- Independently developed statistical and AI predictive classification algorithms that powered the backend engine of an RWD analytics platform (for Pharma clients) with a multi-million-dollar portfolio.
- Developed deep learning algorithm-based proof-of-concepts for binary classification tasks using RWD data in OMOP CDM format with minimal supervision.
- Contributed to the UI/UX design of the RWD Analytics platform using medical domain expertise.
- Routinely worked with developers, data engineers, and with QA team during the software product lifecycle.
- Completed multiple data science projects and Proof-Of-Concepts (POCs) for Pharma and Provider clients.
- Experienced in working with OMICS data.

BC Roy Technology Hospital, IIT Kharagpur **Kharagpur, India**
Medical Officer Jul 2011 – May 2014

- Evening outpatient and casualty management of hospital as a general practitioner as part of mandatory requirements for the completion of post-graduation course (MMST)

KEY ACADEMIC AND PROFESSIONAL ACHIEVEMENTS

- Awarded **Khorana Scholarship** for students showing outstanding promise in medical research.
- Ranked 144 in India among more than hundred thousand candidates from all over India in AIPMT exam, the then most competitive and objective medical entrance examination in India: **AIR 144, Kerala State Rank 4**
- Secured 3rd Rank in MG University Kerala for the First Professional MBBS examination.
- Golden Helix Award for Innovation and Outstanding Performance in Deloitte (2020).

R PACKAGES DEVELOPED

- Robert D (2020). autoCovariateSelection: Automated Covariate Selection Using HDPS Algorithm. R package v 1.0.0.
- Robert D (2023). MRMCsamplesize: Sample Size Estimations for Planning Multi-Reader Multi-Case (MRMC) Studies Without Pilot Data. R package v1.0.0

INVITED TALKS

- AI in Radiology: Driving change in Healthcare, Indian Institute of Science, Bangalore, Nov 2024
- Artificial Intelligence and Data Science, Panel Discussion, Education 21c, Kerala, Nov 2020
- Artificial Intelligence in Healthcare, NATCON 2019, Government Medical College Trivandrum, Nov 2019
- Clinical Trials: Introduction: Webinar, IIM Ahmedabad, Jun 2017

PUBLICATIONS

Peer-reviewed journal publications

1. **Robert D**, Sathyamurthy S, Singh AK, Matta SA, Tadepalli M, Tanamala S, Bosemani V, Mammarappallil J, Kundnani B. Effect of Artificial Intelligence as a Second Reader on the Lung Nodule Detection and Localization Accuracy of Radiologists and Non-radiology Physicians in Chest Radiographs: A Multicenter Reader Study. Acad Radiol. 2025 Mar;32(3):1706-1717. doi: 10.1016/j.acra.2024.11.003. Epub 2024 Nov 25. PMID: 39592384**.**
2. **Robert D**, Aurangzeb B, Baard C, Qureshi AA, Shaheen A, Ambreen A, McFarlane D, Javed H, Bano I, Chiramal JA, Workman L, Pillay T, Franckling-Smith Z, Mustafa T, Andronikou S, Zar HJ. Evaluating the accuracy of artificial intelligence-powered chest X-ray diagnosis for paediatric pulmonary tuberculosis (EVAL-PAEDTBAID): Study protocol for a multi-centre diagnostic accuracy study. BMJ Open. 2025 Jul 28;15(7):e105881. doi: 10.1136/bmjopen-2025-105881. PMID: 40730400.
3. **Robert D**, Ridhi S, Soren P, Kumar M, Pawar S, Reddy B. Comparing the Output of an Artificial Intelligence Algorithm in Detecting Radiological Signs of Pulmonary Tuberculosis in Digital Chest X-Rays and Their Smartphone-Captured Photos of X-Ray Films: Retrospective Study. JMIR Form Res. 2024 Aug 21;8:e55641. doi: 10.2196/55641. PMID: 39167435; PMCID: PMC11375380.
4. **Robert D**. Peer Review Report For: testCompareR: an R package to compare two binary diagnostic tests using paired data [version 1; peer review: 1 approved with reservations]. Wellcome Open Res 2024, 9:351 doi:https://doi.org/10.21956/wellcomeopenres.24690.r97075
5. Gupta A, Nair AM, Ekka S, Gahwai D, Sharma N, Raza Khan F, Damani M, Kumar S, Pawar S, Antony Chiramal J, **Robert D**, Tadepalli M, Vijayan S, S Krishnan P, A Patil N. Evaluating the Usefulness of Artificial Intelligence-based Chest X-Ray Screening in Improving Tuberculosis Detection Among the High-Risk Tribal Population of Chhattisgarh, India: A Prospective Multi-Centre Study. Open Forum Infect Dis. 2026 Jan 7;13(1):ofaf780. doi: 10.1093/ofid/ofaf780. PMID: 41550696; PMCID: PMC12810203.
6. Desita, Z., Tadesse, T., Bohlbro, A. S., Sifna, A., Fekadu, H., Bizuneh, Bizuneh S, Sridhar S, **Robert D**., ... Rudolf, F. (n.d.). Computer-Aided Analysis of Photographed Chest X-Ray Films Performs Well Compared to Trained Radiologists. Mayo Clinic Proceedings: Digital Health. doi:10.1016/j.mcpdig.2026.100338
7. AlJasmi AAM, Ghonim H, Fahmy ME, Nair A, Kumar S, **Robert D**, et al. Post-deployment performance of a deep learning algorithm for normal and abnormal chest X-ray classification: A study at visa screening centers in the United Arab Emirates. Eur J Radiol Open. 2024;13:100606. doi: https://doi.org/10.1016/j.ejro.2024.100606
8. Pettet G, West J, **Robert D**, Khetani A, Kumar S, Golla S, Lavis R. A retrospective audit of an artificial intelligence software for the detection of intracranial haemorrhage used by a teleradiology company in the UK, BJR|Open, 2024; tzae033, doi: https://doi.org/10.1093/bjro/tzae033.
9. Kumar A, Patel P, **Robert D**, Kumar S, Khetani A, Reddy B, Srivastava A. Accuracy of an artificial intelligence-enabled diagnostic assistance device in recognizing normal chest radiographs: a service evaluation. BJR Open. 2024 Sep 14;6(1):tzae029. doi:https://doi.org/10.1093/bjro/tzae029. PMID: 39350939; PMCID: PMC11441651.
10. Duncan SF, McConnachie A, Blackwood J, Stobo DB, Maclay JD, Wu O, Germeni E, **Robert D**, Bilgili B, Kumar S, Hall M, Lowe DJ. Radiograph accelerated detection and identification of cancer in the lung (RADICAL): a mixed methods study to assess the clinical effectiveness and acceptability of Qure.ai artificial intelligence software to prioritise chest X-ray (CXR) interpretation. BMJ Open. 2024 Sep 2014(9):e081062. doi: https://doi.org/10.1136/bmjopen-2023-081062 PMID: 39306349; PMCID: PMC11418533.
11. Garza-Frias E, Kaviani P, Karout L, Fahimi R, Hosseini S, Putha P, Tadepalli M, Kiran S, Arora C, **Robert D**, Bizzo B, Dreyer KJ, Kalra MK, Digumarthy SR. Early Detection of Heart Failure with Autonomous AI-Based Model Using Chest Radiographs: A Multicenter Study. Diagnostics (Basel). 2024 Jul 30;14(15):1635. doi:https://doi.org/10.3390/diagnostics14151635. PMID: 39125511; PMCID: PMC11311468.
12. Chiramal JA, Johnson J, Webster J, Nag DR, **Robert D**, Ghosh T, Golla S, Pawar S, Krishnan P, Drain PK, Mooney SJ. Artificial Intelligence-based automated CT brain interpretation to accelerate treatment for acute stroke in rural India: An interrupted time series study. PLOS Glob Public Health. 2024 Jul 24;4(7):e0003351. doi: https://doi.org/10.1371/journal.pgph.0003351 PMID: 39047001.
13. Vimalesvaran K, **Robert D**, Kumar S, Kumar A, Narbone M, Dharmadhikari R, Harrison M, Ather S, Novak A, Grzeda M, Gooch J, Woznitza N, Hall M, Shuaib H, Lowe DJ. Assessing the effectiveness of artificial intelligence (AI) in prioritising CT head interpretation: study protocol for a stepped-wedge cluster randomised trial (ACCEPT-AI). BMJ Open. 2024 Jun 16;14(6):e078227. doi: https://doi.org/10.1136/bmjopen-2023-078227 PMID: 38885990; PMCID: PMC11184206.

14. Fu H, Novak A, **Robert D**, Kumar S, Tanamala S, Oke J, Bhatia K, Shah R, Romsauerova A, Das T, Espinosa A, Grzeda MT, Narbone M, Dharmadhikari R, Harrison M, Vimalesvaran K, Gooch J, Woznitza N, Salik N, Campbell A, Khan F, Lowe DJ, Shuaib H, Ather S. AI assisted reader evaluation in acute CT head interpretation (AI-REACT): protocol for a multireader multicase study. BMJ Open. 2024 Feb 12;14(2):e079824. doi:https://doi.org/10.1136/bmjopen-2023-079824. PMID: 38346874; PMCID: PMC10862304.
15. Vijayan S, Jondhale V, Pande T, Khan A, Brouwer M, Hegde A, Gandhi R, Roddawar V, Jichkar S, Kadu A, Bharaswadkar S, Sharma M, Vasquez NA, Richardson L, **Robert D**, Pawar S. Implementing a chest X-ray artificial intelligence tool to enhance tuberculosis screening in India: Lessons learned. PLOS Digit Health. 2023 Dec 7;2(12):e0000404. doi:https://doi.org/10.1371/journal.pdig.0000404 PMID: 38060461; PMCID: PMC10703224.
16. Thazhathedath Hariharan H, **Robert D**, Surendran AT. A Methodological Rectification in the Global Hunger Index. Econ Polit Wkly. 2022;57(14):14-17. https://www.epw.in/journal/2022/14/commentary/methodological-rectifi-cation-global-hunger-index.html
17. Thazhathedath Hariharan H, Surendran AT, Haridasan RK, Venkitaraman S, **Robert D**, Narayanan SP, Mammen PC, Siddharth SR, Kuriakose SL. Global COVID-19 Transmission and Mortality-Influence of Human Development, Climate, and Climate Variability on Early Phase of the Pandemic. Geohealth. 2021 Oct 1;5(10):e2020GH000378. doi:https://doi.org/10.1029/2020GH000378 PMID: 34693183; PMCID: PMC8519396.
18. Arya BK, Bhattacharya SD, Sutcliffe CG, Kumar Niyogi S, Bhattacharyya S, Hemram S, Moss WJ, Panda S, Saurav Das R, Mandal S, **Robert D**, Ray P. Impact of Haemophilus influenzae Type B Conjugate Vaccines on Nasopharyngeal Carriage in HIV-infected Children and Their Parents from West Bengal, India. Pediatr Infect Dis J. 2016 Nov;35(11):e339-e347. doi:https://doi.org/10.1097/inf.0000000000001266 PMID: 27753766.
19. Arya BK, **Robert D,** Das Bhattacharya S, Mukhopadhyay J. A framework for web based geographical information systems for countrywide antimicrobial resistance monitoring. Health Policy and Technology. 2013;2(2):85-93. doi: https://doi.org/10.1016/j.hlpt.2013.03.005

Preprints

1. **Robert D**, Sathyamurthy S, Putha P. MRMCsamplesize: An R Package for Estimating Sample Sizes for Multi-Reader Multi-Case Studies. medRxiv. Published online 2023. doi:https://doi.org/10.1101/2023.09.25.23296069
2. Govindarajan A, Agarwal A, Chattoraj S, **Robert D**, et al. Identification of Hemorrhage and Infarct Lesions on Brain CT Images using Deep Learning. arXiV. arXiv:2307.04425. July 2023. doi:https://doi.org/10.48550/arXiv.2307.04425

Selected conference abstracts

1. Rahul Ravind, Subhankar Chattoraj, Santhosh S, Rashi Chamadia, Anshul Singh, Saigopal Sathyamurthy, **Dennis Robert**, et.al. Performance of AI-based software for Pulmonary Nodule detection and characterization on chest X-ray and correlation with CT findings: A retrospective study. Oral Presentation. **ESMO Asia**, Singapore, Dec 2024.
2. Abishek Patil, **Dennis Robert**, Anshul Kumar Singh, Akshay V, Rashi Chamadia, Saigopal Sathyamurthy, Charu Arora, Preetham Putha, Aditya Daftary. Can Deep Learning and Large Language Model Based Chest Radiograph Interpretation Improve the Performance of Radiologists in Triaging and Reporting of Normal and Abnormal Studies? A Multi-Reader Multi-Case Study. Oral Presentation. **RSNA**, Chicago, Dec 2024.
3. George Talama, Eunice Nahache, Peter Mwamlima, Davy Nkosi, James Mpunga, Tisungane Mwenyekulu, **Dennis Robert**, Joseph Njala, Hitler Sigauke, Mackenzie Chivwara, Sam Phiri, Joep J van Oosterhout. Experiences with chest X-ray screening and artificial intelligence software in TB screening and diagnosis at Health Facility level in Malawi. Oral Presentation. **UNION**, Bali, Nov 2024.
4. Kavitha Vimalesvaran, Satish Golla, Jeyakumar Gowsikan, **Dennis Robert**, Ayan Kumar, Shamie Kumar, Rahul Dharmadhikari, Haleema Al Jazzaf, Aysha Luis, Robert Dunk, Mariapola Narbone, Sarim Ather, Alex Novak, Mark Hall, Haris Shuaib, David Lowe. Integration of Calibration in AI Research Pipelines: Insights from a Multi-Center CT Head Prioritisation Study. Annual Meeting of the Society for Imaging Informatics in Medicine (**SIIM**) 2024, USA, Jun 2024.
5. **Dennis Robert**, Swetha Tanamala, Manoj Tadepalli, Sri Anusha Matta, Saigopal Sathyamurthy, Anshul Kumar Singh, Bunty Kundnani, Riddhi Shah, Harshithaa Varatharajan. Artificial Intelligence-based assistance improves physicians' accurate lung nodule detection using chest radiographs: A Multi-Reader Multi-Case study. European Congress of Radiology (**ECR**) 2024, Austria, Feb 2024.

6. Abhishek Patil, **Dennis Robert**, Charu Arora, Syed Pasha, Anshul Chauhan, Anagh Purkar, Anshul Kumar Singh, Saigopal Sathyamurthy, Preetham Putha, Aditya Daftary. Impact of an AI-based workflow in interpretation of chest radiographs. Oral Presentation, **RSNA**, USA, Nov 2023.
7. Emiliano Garza, Mannudeep Kalra, **Dennis Robert**, Sai Kiran, Charu Arora, Manoj Tadepalli, Preetham Putha et. al. Autonomous AI-based CXR interpretation for predicting congestive heart failure: A multicenter study. Oral Presentation, **RSNA**, USA, Nov 2023.
8. Souvik Mandal, **Dennis Robert**, Rohit Chouhan, Prakash Vanapalli, Vikash Challa, Saigopal Sathyamurthy, Amit Chouksey, Preetham Putha, Ankit Modi. Using an artificial intelligence algorithm to improve radiologists' performance in detecting pulmonary nodules in chest-CT scans: a multi-reader multi-case study. Oral presentation, European Congress of Radiology (**ECR**) 2023, Vienna, March 2023. Insights Imaging 14 (Suppl 4), 217 (2023). RPS 1705-5.
9. Kristin Feeney, **Dennis Robert**, Prerna Patil, Sergey Charkin, Dan Housman, Yuval Koren, Xia Haiping, Jinlei Liu. Building Deep Learning Models with the OMOP CDM. Poster, 2017 **OHDSI Symposium**, USA, Oct 2017.
10. **Dennis Robert**, Bikas K Arya, Mausom Mallick, Sangeeta Das Bhattacharya, Swapan Kumar Niyogi, Shekhar Chakrabarty, Sutapa Mandal, Subhashish Bhattacharyya. Association between baseline plasma HIV viral load and nasopharyngeal pneumococcal colonization in children with HIV infection. Poster, 9th International Symposium on Pneumococci and Pneumococcal Diseases (**ISPPD-9**), India, March 2014. Volume: pneumonia 2014 Mar 9-13; 3:1-286.

GRANTS

- **Grant name**: E.W. "Al" Thrasher Award by Thrasher Research Fund
  Title of the planned study: Evaluating the accuracy of AI-powered paediatric tuberculosis diagnostic pathway: A two-staged study (EVAL-PAEDTBAID)
  Grant awarded on: September 2024
  Principal Investigator: Prof. Heather J Zar, University of Cape Town, South Africa
  Contribution: Conceptualization and design of study protocol and statistical analysis plan, grant writing, and response to reviewers

SCIENTIFIC BLOGS

1. The mathematical relationship between survival function and hazard function. Towards Data Science, Dec 2021.
2. Five confidence intervals for proportions that you should know about. Towards Data Science, Aug 2020.
3. Demystifying the binomial distribution. Towards Data Science, Jul 2020.
4. Demystifying the p-value. The Startup, Jun 2020.
5. How deadly is COVID-19. Medium, Apr 2020.

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