Samarth (Sam) Rawal, MD, MS

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PROFESSIONAL SUMMARY

Internal Medicine resident at Mayo Clinic, with a background in computer science and over a decade of clinical AI research and development. Seeking an academic hospitalist role centered on excellent care for medically complex patients, while helping build clinical AI systems that improve physicians' clinical reasoning and workflows.

EDUCATION & POSTGRADUATE TRAINING

Jul 2024 - Jun 2027 (expected)	Residency, Internal Medicine Mayo Clinic Arizona
Jun 2020 - May 2024	MD, Carle Illinois College of Medicine University of Illinois at Urbana-Champaign
Aug 2018 - May 2020	MS, Computer Science; concentration in Biomedical Informatics Arizona State University *Thesis: Multi-Perspective Semantic Information Retrieval in the Biomedical Domain [https://arxiv.org/abs/2008.01526]*
Aug 2014 - May 2018	BS, Computer Science Arizona State University *Thesis: Prescription Information Extraction from Electronic Health Records using BiLSTM-CRF and Word Embeddings [https://repository.asu.edu/items/48493]*

SELECTED CLINICAL RECOGNITION & MEDICAL EDUCATION EXPERIENCE

- **Mayo Clinic "Above and Beyond" Clinical Recognition Certificate** for patient management overnight (2025)
- Developed and delivered **lectures and educational materials** for residents, faculty physicians, and clinical research fellows on the practical and responsible use of AI in clinical care through Mayo Clinic's Artificial Intelligence in Internal Medicine track; 4 presentations to various groups (2024–present).
- **Co-developed lectures** and served as **Lead Teaching Assistant** for the "Artificial Intelligence in Medicine" **Continuing Medical Education course** at the University of Illinois Urbana-Champaign (2020–2021).

GRANT SUPPORT

- OSLER: An AI-Powered Clinical Reasoning Workspace for Graduate Medical Education
  Mayo Clinic-Arizona State University Alliance for Health Care, 2026
  Role: Co-Principal Investigator | Total award: $100,000 | Status: Active

ARTIFICIAL INTELLIGENCE & SOFTWARE ENGINEERING EXPERIENCE

Artificial Intelligence in Internal Medicine, Mayo Clinic Arizona (June 2024 - Present)

- Inaugural trainee in the Artificial Intelligence in Internal Medicine track at Mayo Clinic. Research in the BEACON Lab at Mayo Clinic.
- Leading development of **Osler Copilot**, an **agentic AI system** integrated into the clinical chart designed to **augment clinicians' workflows** by proactively surfacing appropriate contextual information, assisting with documentation, and piecing together data throughout the medical record
  - Currently undergoing evaluation and limited deployment within clinical practice

    - Serve as co-principal investigator on a $100,000 grant supporting this work
- *Broad research focus:*
    - Develop, evaluate, and deploy agentic LLM systems that integrate into clinical workflows while preserving clinician ownership of clinical reasoning.
    - Develop clinically grounded evaluations of frontier models that reflect real-world clinical decision-making challenges.

Varatharajah Lab at UIUC (Natural Language Processing in Medical Records) (Dec 2020 - May 2024)

- Applied zero- and few-shot AI techniques to electronic medical records to **answer clinical questions**, **intelligently filter** and sort data, and **automatically generate reports**, making information deep within patient records more accessible and actionable.
- Published open-source clinical AI software packages and models for clinical informatics and AI which have been **downloaded more than 50,000 times** over the past 5-7 years.
- Notable work included an **IEEE Signal Processing in Medicine and Biology Best Paper Award** and collaborations with Mayo Clinic, Barrow Neurological Institute, and other medical institutions to build applied AI software for clinical workflows.

"Artificial Intelligence in Medicine" Certificate Continuing Medical Education Course, UIUC (Dec 2020 - Sept 2021)

- Developed lectures for a UIUC Department of Bioengineering course providing a technical overview of machine learning and artificial intelligence in the clinical domain.
- Led the initiative to incorporate teaching assistants, served as the first teaching assistant, and supported the inaugural cohort through course completion.
- The class serves as a Continuing Medical Education course for physicians and healthcare workers.

Cognition and Intelligence Lab at ASU (Natural Language Processing Research) (Jan 2015 - July 2020)

- Researched under Dr. Chitta Baral using natural language processing across biomedical and clinical data, including electronic medical records, to make **actionable decisions that improve healthcare delivery**.
- Led the ASU team for several clinical NLP challenges, including the Harvard National NLP Clinical Challenge (n2c2); the team placed **#1 of 47 teams** in the 2018 Track 1 challenge.
- Led **clinical NLP graduate engineering projects** and guided approximately 20 computer science MS and PhD students from ideation through completion of academic clinical NLP research.
- Collaborated with Mayo Clinic and King's College Hospital in London to design and integrate AI systems into data and documentation pipelines.

Center for Innovation AI Researcher, Mayo Clinic, Rochester, MN (July 2018 - June 2020)

- Integrated an AI-powered system into Mayo Clinic Oncology workflows, reducing nurse time to create Cancer Survivorship Care Plan documents from approximately **one hour to a few minutes**.
- Worked with oncologists to develop a natural language processing system that automatically extracts data from electronic medical records and generates patient reports.

Bioinformatician, Translational Genomics Research Institute (TGen), Phoenix, AZ (Jun 2016 - Jun 2017)

- Developed GeneData, a **virtual reality data visualization** program to help physicians clearly and intuitively visualize large amounts of patient genomic information during cancer treatment.
- The **ASU Biomedical Informatics Department** used the tool to demonstrate clinical technology in biomedical informatics courses.

Software Architecture Intern, Dell CTO Office, Austin, TX (May 2017 - Aug 2017)

- Worked in the Office of the Chief Technology Officer on **consumer technology intended for commercial deployment** in two to five years.
- Developed software for voice assistants such as Amazon Alexa to **help users communicate** with their PCs intuitively.
- Presented the work to Dell technical and executive management, including the **Chief Technology Officer**.

SELECTED PUBLICATIONS & SCHOLARLY WORK

Full publication list available on Google Scholar. Highlighted works are marked [*].

- AI in Geriatric Medicine and Serious Illness Care. S. Rawal and A. A. Shah. Current Geriatrics Reports, 2025.
- **[*]** [preprint] MIRIAD: Augmenting LLMs with Millions of Medical Query-Response Pairs. Q. Zheng, S. Abdullah, S. Rawal, C. Zakka, S. Ostmeier, M. Purk, E. Reis, E. J. Topol, J. Leskovec, and M. Moor. arXiv (cs.CL), 2025.
- Tensor Decomposition of Large-scale Clinical EEGs Reveals Interpretable Patterns of Brain Physiology. T. Gupta, N. Wagh, S. Rawal, B. Berry, G. Worrell, and Y. Varatharajah. Accepted to the 11th International IEEE EMBS Conference on Neural Engineering (NER '23).
- [*] Evaluating Latent Space Robustness and Uncertainty of EEG-ML Models under Realistic Distribution Shifts. N. Wagh, J. Wei, S. Rawal, B. Berry, and Y. Varatharajah. NeurIPS, 2022.
- [preprint] Assessing Robustness of EEG Representations under Data-Shifts via Latent Space and Uncertainty Analysis. N. Wagh, J. Wei, S. Rawal, B. M. Berry, and Y. Varatharajah. arXiv, 2022.
- [preprint] SCONER: Scoring Negative Candidates Before Training Neural Re-Ranker for Question Answering. M. Luo, M. Parmar, J. S. Mahendran, S. Jain, S. Rawal, and C. Baral. OpenReview, 2022.
- [*] SCORE-IT: A Machine Learning Framework for Automatic Standardization of EEG Reports. S. Rawal and Y. Varatharajah. 2021 IEEE Signal Processing in Medicine and Biology Symposium (SPMB). Best Paper Award.
- Domain-guided Self-supervision of EEG Data Improves Downstream Classification Performance and Generalizability. N. Wagh, J. Wei, S. Rawal, et al. Machine Learning for Health, 2021.
- [*] [MS Thesis] Multi-Perspective Semantic Information Retrieval in the Biomedical Domain. S. Rawal. MS Thesis, 2020.
- Novel evidence synthesis system to support living systematic reviews and living guidelines for cancer immunotherapy. I. B. Riaz, S. Rawal, R. Siddiqi, et al. Journal of Clinical Oncology, 2020.
- Innovation in Evidence Synthesis: A Living Systematic Review of Immune Checkpoint Inhibitors in Cancer Patients. I. B. Riaz, S. C. Rawal, R. Siddiqi, N. Asghar, M. Akhtar, O. Gajic, Z. Wang, V. Montori, V. Herasevich, R. S. Go, C. Baral, S. V. Rajkumar, and M. H. Murad. Journal of Global Oncology, 2019.
- Semi-automated clinical lexicon induction and its use in cohort selection from clinical notes. S. Rawal, A. Prakash, S. Adhya, S. Kulkarni, S. Anwar, C. Baral, and M. Devarakonda. 2020 IEEE International Conference on Healthcare Informatics (ICHI).
- Identification of Adverse Drug Reaction Mentions in Tweets - SMM4H Shared Task 2019. S. Rawal, S. Rawal, S. Anwar, and C. Baral. Proceedings of the Fourth Social Media Mining for Health Applications Workshop, 2019.
- [BS Thesis] Prescription Information Extraction from Electronic Health Records Using BiLSTM-CRF and Word Embeddings. S. Rawal, A. Saadat, and C. Baral. BS Thesis, Arizona State University, 2018.

SELECTED POSTERS & PRESENTATIONS

- CAPE-Bench: Clinical Actions & Planning Evaluation Benchmark. Poster at Mayo Clinic AI Summit, Rochester, MN, 2025. S. Rawal, et al.
- SCORE-IT: A Machine Learning Framework for Automatic Standardization of EEG Reports. Carle Illinois College of Medicine Research Day, 2021. S. Rawal and Y. Varatharajah.

- Semantic Search of Medical Records. Carle Illinois College of Medicine IDEA Course, 2022. Samarth Rawal; Abigail Adams, MD; April Yasunaga, MD; Ujjal Mukherjee, PhD.
- Semi-automated clinical lexicon induction and its use in cohort selection from clinical notes. Phoenix Symposium on Data Analytics in Healthcare at the University of Arizona School of Medicine, 2019. S. Rawal et al.
- Uncovering insights about effective palliative care via Machine Learning methodology applied to city-level data. PLuS Alliance Symposium at King's College Hospital, London, UK, 2019. S. Rawal, A. Mitra, and C. Baral.
- BioParser: A Knowledge Parser for Biomedical Text. Poster presentation, Fulton Undergraduate Research Initiative Symposium, Tempe, AZ, 2015. S. Rawal, A. Sharma, and C. Baral.
- Improving and Evaluating the BioParser: A Knowledge Parser for Biomedical Text. Poster presentation, Fulton Undergraduate Research Initiative Symposium, Tempe, AZ, 2016. S. Rawal, A. Sharma, and C. Baral.

SELECTED SOFTWARE

Selected software projects I have developed and released. Full list available at https://samrawal.com/.

- **Osler Admit** (getosler.com/admit) — Creator. An admission and H&P workspace designed to support clinical plan development, documentation, and physician reasoning.
- **Osler Prerounds** (getosler.com/prerounds) — Creator. A local-first inpatient workspace for tracking multiple patients, evolving problem-based plans, and clinical tasks during prerounding.
- **Pearls** (samrawal.com/pearls) - Creator. An app for capturing clinical pearls while on rounds or studying, with an AI agent that can fetch additional context and the latest guidelines to augment each pearl.
- **Clinitokenizer** (GitHub) - Creator. A BERT-based tokenization package, model, and inference software for sentence tokenization of poorly formatted medical notes. The core model has more than 50,000 downloads.

AWARDS & ACHIEVEMENTS

- Best Paper Award, 2021 IEEE Signal Processing in Medicine and Biology Symposium (SPMB). Best paper among 35 accepted and presented papers for SCORE-IT: A Machine Learning Framework for Automatic Standardization of EEG Reports.
- #1 in the Harvard National NLP Clinical Challenge (n2c2), among 47 teams. ASU team leader for the 2018 Track 1 competition; built a system that flagged potential patients for 13 clinical trials from clinical records with greater than 90% accuracy.
- #1 at the Clinton Global Initiative University (CGI-U) 2017 Codeathon. Ideated and developed Patient Record Access Network (PRAN), a low-cost hardware and software package addressing unreliable patient identification in rural India.
- Arizona State University Dean's List, Fall 2014 - Spring 2018 (eight semesters); graduated summa cum laude with a BS.

TEACHING EXPERIENCE

- Course Development and Teaching Assistant, AI in Medicine Certificate CME Course, UIUC (Summer 2021 - Fall 2021). Helped create lectures and served as a teaching assistant for a UIUC Department of Bioengineering Continuing Medical Education course for physicians and healthcare workers.
- Instructor, FSE 100 - Introduction to Engineering, Arizona State University (Fall 2018 - Fall 2020). Created and presented weekly lectures, ran weekly labs, and graded student work.

- Teaching Assistant, CSE 576 - Natural Language Processing, Arizona State University (Fall 2018 - Spring 2020). Developed class projects, worked with student teams throughout their projects, and graded student work.
- Math Tutor, Arizona State University Academic Success Programs (2015 - 2016). Tutored courses ranging from calculus and discrete mathematics to applied linear algebra at ASU's largest mathematics tutoring center.

MUSIC

Hindustani Classical Music (2003 - Present)

- Vocalist and tabla player.
- Earned a Visharad Degree, equivalent to a bachelor's degree, in Hindustani Classical Vocal Music from the Indian Institute of Classical Music after 10 years of intensive training and performances.
- Accompanied artists in more than 20 public performances on tabla. Studied tabla for 13 years under a senior disciple of Ustad Alla Rakha.
- Performed in more than 30 Indian classical and light vocal and instrumental public performances over the past 10 years.