# JULIAN MERCER

**HEALTHCARE RESEARCH SCIENTIST**

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## PROFESSIONAL SUMMARY

Healthcare Research Scientist with 7+ years developing machine learning methods for clinical data, imaging, and patient outcomes. Works with clinicians, validates models against real-world cohorts, and prioritizes privacy, fairness, and regulatory-ready documentation.

## CORE SKILLS

Clinical machine learning | Medical imaging | Electronic health records | Survival analysis | Model calibration | Fairness evaluation | PyTorch | Python | R | HIPAA | IRB protocols | FHIR | Active learning | Scientific writing

## PROFESSIONAL EXPERIENCE

**Senior Research Scientist** Feb 2022 - Present
**Mayo Clinic, Rochester, MN**

- Developed a deep learning model for early sepsis risk from electronic health records, achieving 0.86 AUROC on a held-out hospital cohort.
- Partnered with intensivists to define labels and alert thresholds, reducing false alerts per 100 patient-days by 29%.
- Evaluated subgroup performance across age, sex, and race and documented calibration gaps for the model review board, with recommended mitigations for each.
- Led an IRB-approved retrospective study of 48,000 admissions and co-authored two peer-reviewed clinical papers.
- Built a de-identification and audit workflow so research data stayed within HIPAA-compliant environments, with access logs reviewed by the privacy office each quarter.
- Collaborated with hospital information security and legal teams on data-use agreements for four external research partners, shortening approvals by several weeks.
- Presented validated sepsis model results to the hospital quality committee, covering calibration, subgroup gaps, and monitoring plans, and secured approval for a pilot on two medical units.

**Research Scientist** Aug 2019 - Jan 2022
**Philips Research, Cambridge, MA**

- Trained convolutional models for chest imaging triage, improving sensitivity for critical findings from 88% to 93% while keeping the false-positive rate within the clinical target.
- Designed external validation across three hospital systems to test generalization before product evaluation, reporting results by site, scanner type, and patient group.
- Wrote technical reports on the triage model for clinical partners, summarizing training data, limitations, and monitoring plans in plain language.
- Collaborated with regulatory specialists on model documentation, intended-use statements, and change-control plans that product teams could reuse for later submissions.
- Reduced annotation cost 25% by using active learning to select the most informative scans for radiologist review.
- Mentored two research engineers on cohort definitions and leakage checks, improving review outcomes for internal model proposals.
- Mentored two postdoctoral fellows on study design and model validation, supporting a first-author clinical journal submission.

## EDUCATION

**Ph.D. in Biomedical Informatics**, Harvard University, Cambridge, MA

## CERTIFICATIONS

CITI Human Subjects Research | HL7 FHIR Proficiency