M4

Interoperable synthetic data

Synthetic cohorts that stay valid against FHIR and OMOP standards.

Master's · 30 credits | Health informatics | Suits: KI / SU (Health Informatics) · KTH (Medical Engineering)

The question

A synthetic cohort is only usable if it loads into the systems researchers already use. How often do synthetic records violate FHIR profiles, OMOP CDM conventions and basic clinical plausibility, and how should that be tested and reported?

Why it matters

Hospitals and research platforms run on standards. Structural errors in synthetic data waste analysts' time and erode trust faster than statistical gaps. A standard conformance suite is a practical, reusable contribution.

What you would do

01 Assemble a conformance suite: FHIR profile validation, OMOP data-quality checks (e.g. OHDSI tooling), referential integrity and clinical plausibility rules.

02 Apply it to synthetic releases and to their public seed data as a baseline.

03 Classify the violations found and how they affect downstream use.

04 Propose a conformance section for a release certificate.

What you would produce

- An open conformance test suite
- A violation taxonomy with examples
- A reporting format for interoperability

Good fit if you have

Health data standards (FHIR, OMOP) or willingness to learn them quickly; SQL and Python.

Data and access

Public seed data (CMS DE-SynPUF) and synthetic releases from day one. Work on real patient records only inside a partner's approved secure environment, with ethics approval. We hold no Swedish patient data.

Timing and place

Spring or autumn 2027, 20 weeks / 30 credits. Stockholm (Solna) or hybrid.

Supervision

Gaurav Raj Chattarki, Founder, Synthetix Health, together with your academic supervisor.

Questions or a proposal of your own? gaurav@synthetixhealth.com · synthetixhealth.com/careers#thesis

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