EPICENTER Innsbruck
Institute of Clinical Epidemiology I Public Health I
Health Economics I Medical Statistics and Informatics

MEDIZINISCHE UNIVERSITÄT INNSBRUCK

PhD position: Multicentre pre-training of ICU foundation models

Medical University of Innsbruck | 3–4 years | fully funded | start as soon as possible (flexible)

Project: GPT-MEDIC (ERC Starting Grant)
Host: Institute of Clinical Epidemiology, Public Health, Health Economics, Medical Statistics and Informatics
Supervisor: Patrick Rockenschaub

In this ERC-funded PhD, you will develop methods for pre-training on ICU event streams across multiple hospitals. The core challenge is building foundation models that generalise across sites without learning site-specific shortcuts or memorising sensitive information.

ICU data are not like text or images. Events are irregular, values continuous, and measurements depend on clinical decisions that vary by hospital, clinician, and patient state. These quirks make generalisation difficult and privacy risks real, which is why your work will explore multicentre and potentially federated approaches to pre-training. Federated learning matters because ICU data often cannot be pooled.

The goal is foundation models that transfer across settings and support many clinical outcomes. You will have access to ~1M ICU patients and ~33B events, with around half available from day one. The project involves close collaboration with Amsterdam UMC, UCL, and Cambridge.

The group

You will join the recently established research group "AI for Clinical Decision-Making" within a larger institute. You will have regular one-on-one supervision and direct access to clinical and technical collaborators across partner sites.

What we are looking for

- MSc in computer science, statistics, mathematics, data science, or related field
- Strong Python skills and experience with PyTorch, JAX, TensorFlow, or similar
- Demonstrated ability to complete a machine learning or data science project

Experience with clinical data, federated learning, or data privacy is helpful but not required.

What we offer

- Fully funded position at € 39,005.40 gross/year (30 h/week) per university collective agreement
- PhD program in Digital Medicine, with structured coursework and a peer cohort
- Shared access to ~30 H200 GPUs
- Conference travel and publication support

Women and underrepresented candidates are especially encouraged to apply. German is not required. You will be expected to relocate to Innsbruck, Austria.

How to apply Email Patrick Rockenschaub (patrick.rockenschaub@i-med.ac.at) with your CV and one relevant GitHub repository (not your full profile) showing code you wrote for a project, with a brief note on the goal of the project and your exact contribution

Deadline: 1 July 2026