Report from the Fall School in Computational Neuroscience 2026

Event: EITN EBRAINS Fall School in Computational Neuroscience 2026
Organisers: European Institute for Theoretical Neuroscience (EITN) and EBRAINS
Location: Pavia, Italy
Dates: 21 September – 30 September 2026

With support from The NUUG Foundation, I had the opportunity to participate in the Fall School in Computational Neuroscience 2026, organised by the European Institute for Theoretical Neuroscience (EITN) and EBRAINS. The course, which spanned 10 days at the end of September, offered a detailed and hands-on introduction to neural simulations and network modelling tools across scales, with a strong emphasis on open-source software and freely available research resources.

The school was held in Pavia in Italy, a beautiful historic university city about half an hour by train from Milan. It is home to one of Europe's oldest universities, the University of Pavia, founded in 1361. For a neuroscientist, it is particularly exciting that Camillo Golgi, whose work in neuroanatomy helped establish the foundations of modern neuroscience, both studied and spent most of his career here (1). The course also benefitted from these historic surroundings; most lectures were held in the traditional Aula Spallanzani lecture hall, and many participants, including myself, were accommodated at the prestigious Almo Collegio Borromeo, a university residence founded in 1561 (2).

1. University of Pavia and Camillo Golgi's statue on campus. Photo: Anna M. Kollstrøm.

This year's school was organized by a research group at the University of Pavia whose work focuses on the cerebellum, a brain region involved in the coordination of movement, balance, and posture. Many of the topics therefore centred on cerebellar function, but the course also included guest speakers covering other brain circuits and neurological disorders, including epilepsy and neurodegenerative diseases. The lectures started with single-neuron and microcircuit models and gradually increased in scale over the 10 days, demonstrating how neural circuits can be modelled at different levels. It was particularly interesting to see how increasing scale required progressively greater abstraction of key components present in single-neuron models. A significant portion of the course was also devoted to The Virtual Brain (TVB), an open-source platform for whole-brain simulation that makes advanced modelling tools freely available to researchers worldwide.

2. Almo Collegio Borromeo. Photo: Anna M. Kollstrøm.

The mornings were dedicated to lectures, while the afternoons focused on project work. Based on our interests, participants were divided into four groups working on 1) single neurons, 2) microcircuits, 3) mean-field models, and 4) whole-brain simulations using TVB. I joined the single-neuron group, where we learned how to implement models of two cerebellar cell types and simulate their activity in response to various perturbations. It was particularly valuable to gain hands-on experience with the implementation of these models, how they can be adapted to represent different physiological and pathological conditions, and how they can be used to improve our understanding of biological phenomena and guide follow-up laboratory experiments. The results from the group projects were presented to all participants, tutors, and speakers on the final day. Through these presentations, we also learned how the other modelling approaches could be applied in practice.

The combination of lectures and project work greatly improved both my theoretical understanding of computational models of neural circuits and my practical ability to use them. The course introduced a range of open-source tools, platforms, codebases, and datasets for computational neuroscience, demonstrating how modern research increasingly depends on collaborative software development and openly shared resources. Learning how these tools are applied in neuroscience, where to find them, and how to adapt existing code provides a strong foundation for incorporating computational approaches into my future work. The availability of these freely accessible resources may also benefit the research environment at NTNU by lowering the barrier to adopting computational methods. The international nature of the school provided an excellent opportunity to meet, discuss, and learn from researchers at different career stages. As the course lasted for 10 days, there was also ample opportunity to interact in more informal settings during evenings and over the weekend, resulting in lasting friendships and connections that may lead to future collaborations.