PhD Project
"Machine Learning applied to the analysis of scattering data"

The research group of Prof. Dr. Frank Schreiber at the University of Tübingen deals with the physics of molecular and biological materials using X-ray and neutron scattering. The main research areas are materials for photovoltaics (such as organic semiconductors and organic-inorganic halide perovskites), proteins in solutions and at the interfaces, and complex nano-structured materials. For further information, please visit our group web page at www.soft-matter.uni-tuebingen.de.

We are currently looking for a PhD student to join our team and help us make exciting new advances in applications of machine learning (ML) strategies for analyzing X-ray and neutron scattering data. You will be working in a large international research group at the Institute of Applied Physics supervised by experienced colleagues. The group offers well-equipped laboratories and a highly collaborative international environment. You will contribute to the top scientific experiments, will obtain practical experience, improve your soft skills (presentation, communication, language, etc), learn the strategies of data organization and analysis.

Your tasks
- Development of ML-based tools to analyse data from different surface sensitive scattering techniques (X-ray Reflectivity (XRR), Grazing-Incidence Wide-Angle X-ray Scattering (GIWAXS) and others)
- Contribution to the scattering data analysis and support of data/metadata formats developed in the group
- Integration of the developed software into the computational environments and data handling routines

You will also have an opportunity to
- Participate in X-ray scattering experiments at world leading large-scale X-ray facilities such as Deutsches Elektronen-Synchrotron DESY in Hamburg, European Synchrotron Radiation Facility ESRF in Grenoble and European X-ray Free Electron Laser EuXFEL in Schenefeld
- Present your scientific results at conferences and in publications

Requirements
- Master's degree in Physics, Chemistry or Computer Science, or equivalent
- Interest in Physics, Chemistry and Machine Learning
- Good written and spoken English
- Ability to work both independently and in a team
- Programming skills (Python) and acquaintance with modern machine learning frameworks (PyTorch/JAX) are strong advantages

Your qualifications
As a candidate, you should have good communication skills, an interest in detail and motivation to familiarize yourself with new subject areas. Both working independently and working in a team, e.g. during the measurement campaigns, is particularly important. Knowledge of programming languages such as Python is an advantage. Practical lab skills and enjoying experimental work is also a plus. Knowledge of German is not necessary, but will be considered as an advantage.

How to apply
Your application should be accompanied by a cover letter describing motivation, skills and any special achievements. Furthermore, a CV and a transcript of records should be added. The positions can be filled immediately. Please send your application as one PDF-file or any related inquiries to softmatter@ifap.uni-tuebingen.de