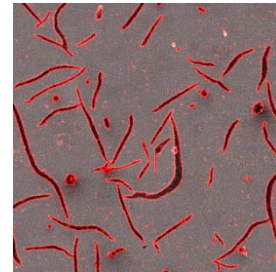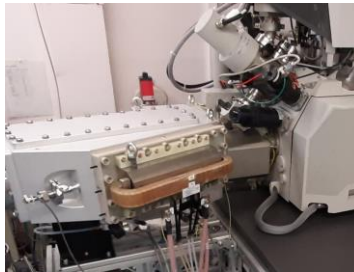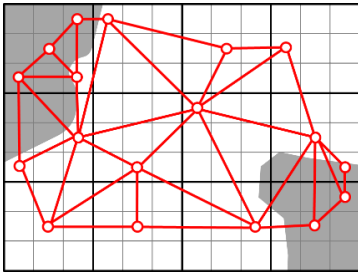To strengthen our dedicated team in the research department Agents and Simulated Reality in Saarbrücken we are looking for a

(Senior) Researcher (m/f/d)

(full-time, initially limited to 3 years)

In the research department Agents and Simulated Reality, headed by Prof. Dr. Philipp Slusallek.

The topic (scientific):

>> The research idea *Adaptive Sampling in Scanning Microscopy* investigates algorithmic questions in the context of measurements in a scanning microscope. We pursue the goal of obtaining a maximum of information with a minimum of measurement time aka. electron dose aka. radiation damage. This leads to fundamental questions about measurements ("How should a finite budget of electrons be distributed?", "Should all pixels receive the same amount of dose or are same pixels more relevant than others?", "Should we always measure all pixels, or are there situations where scanning only a subset is better, if we can then afford a higher measurement precision for these pixels?").

>> Sparse or non-uniformly sampled data needs to be reconstructed to conventional image data for inspection. We develop and investigate custom reconstruction algorithms using, for example, filter techniques, exemplar-based inpainting, or neural networks. Contrary to mainstream applications in image processing, our focus is hereby on quantitative error control rather than plausible looking results.

>> In the specific project, we investigate methods to extend adaptive sampling algorithms from grayscale still images to movies of in-situ experiments and to hyperspectral imaging. The algorithms are developed for prototype and next generation in-situ instruments (microscopes and spatially resolving mass spectroscopes) in the context of battery materials research.

>> We are looking for a scientist or senior scientist (m/f/d) with a background in computer graphics, especially in image processing, and statistics. Ideally, you have previous experience in signal processing, specifically in the mathematical treatment of noise. Interest in, and experience with, machine learning is an asset.

Your tasks (formal):

>> Scientific work, i.e., developing experiments and prototypes, data analysis, writing publications.

- ≫ Project management of funded and industrial projects, including attending consortium events and providing guidance to staff members

- ≫ Senior Researcher only:

  - ≫ Contribute to the supervision of PhD and master students and help them reach scientific excellence.

  - ≫ Drafting of BMBF or EU project proposals, depending on experience, either in a supporting role or independently with your own network.

Our requirements (formal):

- ≫ Master (senior researcher: PhD) in computer science, mathematics, data science, or equivalent

- ≫ Interest in writing scientific publications (senior researcher: already paper as first author)

- ≫ Experience in computer graphics (image processing area) and statistics.

- ≫ Solid programming skills in e.g. CUDA, Python and C++.

- ≫ English language skills at publication level.

What you can expect (formally):

- ≫ The opportunity to work on interdisciplinary research projects at the intersection of computer graphics and artificial intelligence

- ≫ Possibility to obtain a PhD degree (researcher only).

- ≫ Work at Germany's most prestigious research organization in artificial intelligence

- ≫ Excellent contacts to industry and science

- ≫ Excellent facilities and equipment

We look forward to receiving your informative application documents, including your earliest possible starting date. Please contact Oliver Keller (oliver.keller@dfki.de) for formal questions, Tim Dahmen (tim.dahmen@dfki.de) for scientific questions or find the official job opening at https://jobs.dfki.de/en/vacancy/en-senior-researcher-m-f-d-528822.html