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Artificial-Intelligence-Driven Characterization of Crystallographic Interfaces from Electron Microscopy (12 min talk + 3 min discussion)

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Characterizing crystallographic interfaces in synthetic nanomaterials is an important step for the design of novel materials. Trained materials scientists can assign interface structures of materials by looking at high-resolution imaging and diffraction data obtained by aberration-corrected scanning transmission electron microscopy (STEM). However, STEM datasets cannot be fully exploited due to the lack of automatic analysis tools. Here, we present AI-STEM, a newly developed AI tool, based on a a Bayesian neural network, for accurately extracting the key features of (poly)crystalline materials from atomic-resolution STEM images. It achieves excellent predictive performance for identifying crystal structure and lattice misorientations on experimental images.

Poster title

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