Job Description:

The Department of Physics, Applied Physics and Astronomy at Rensselaer Polytechnic Institute has an opening for an outstanding postdoctoral research fellow in the inter-disciplinary area of materials research and machine learning (ML). This research will exploit ML tools for the study of materials. This includes, but is not limited to, the study of two-dimensional (2D) magnetic materials. This effort will be highly interdisciplinary and will involve computational physics, condensed matter physics and artificial intelligence.

We will develop ML models to augment investigations of 2D magnetic materials using high-throughput density functional theory (DFT) calculations. We will use ML to discover 2D magnetic materials and to uncover physical insights for magnetic ordering in 2D. This work will involve datamining existing materials databases, as well as creating new materials databases using DFT. Materials descriptors will be developed that are suited to the study of this class of materials. ML models will be trained, then analyzed to extract physical insight into the problem of magnetic ordering in reduced dimensions.

We are seeking excellent postdoctoral candidates with a PhD in one of the following areas: chemistry, physics, computer science, chemical engineering or electrical engineering. Expertise in magnetic materials is preferred. The scientific focus includes, but is not limited to:

- Electronic structure and magnetic properties such as the magnetocrystalline anisotropy and Curie temperature.
- Creating a materials database of 2D materials using high-throughput DFT.
- Designing ML tools for 2D materials' property prediction.

Required education and skills:

- The candidate must have significant programming experience in one of the following languages: Python, Fortran, C, C++, Java and Matlab.
- Expertise in
    - Solid-state physics and magnetic materials
    - Density functional theory calculations
- Proficiency in at least one of the following is preferred, but not required:
    - Machine learning models, neural networks
    - Graph theory
    - Keras, Tensorflow
    - Bayes search optimization
    - Unix / linux, git, bash / shell scripting
    - Parallel programming (MPI / OpenMP)

The candidate should be self-motivated, have a goal-oriented personality with good interpersonal skills and support team-work in an international, interdisciplinary environment.

The candidate must have a track record of publication in peer-reviewed journals or conference proceedings and be able to provide at least three letters of recommendation.

Job Application Contact: Trevor David Rhone
Job Application Email: rhone@materials-intelligence.com

A complete application includes:

- Curriculum Vitae or Resume
- Contact information for at least three references
    - References should be from persons familiar with your educational and professional qualifications (include your thesis or dissertation advisor, if applicable)
- Transcripts
    - Transcript verifying receipt of degree must be submitted with the application. Student/unofficial copy is acceptable
- If selected, the participant may also be required to write a research statement
    - Include your research background and motivation for future research
- Please also apply to:
    - https://rpijobs.rpi.edu/postings/8102

Questions about this opportunity? Please email to rhonet@rpi.edu