Research Scientist I or II
Global Cloud Retrieval Scientist
22-122

The Cooperative Institute for Research in the Atmosphere (CIRA) on the Foothills Campus at Colorado State University (CSU) in Fort Collins, CO, seeks to hire two Research Scientists (I or II) to work on 3D global cloud retrievals from satellite data, and also the application of machine learning methods to quantify cloud properties in the Earth's atmosphere, and, potentially, use of machine learning for other satellite applications. These positions allow for a flexible start date between 15 October 2022 and 31 January 2023 and may be eligible to negotiate a telework schedule depending upon the terms of CSU's telework policy. Position title of Research Scientist/Scholar I will apply to the finalist with a PhD in atmospheric science or closely related field followed by at least 1-2 years of experience working with meteorological data sets, and position title of Research Scientist/Scholar II will apply to the finalist with a with a PhD in atmospheric science or closely related field followed by at least 3 years of experience working with meteorological data sets.

These positions are part of CIRA's Meteorological Satellite Application Team led by Dr. Curtis Seaman, and they interact closely with CIRA's Machine Learning Team led by Dr. Imme Ebert-Uphoff, Co-PI on the NSF-funded AI Institute for Research on Trustworthy AI in Weather, Climate, and Coastal Oceanography (AI2ES, see https://www.ai2es.org/). The individuals in these positions will report to Drs. Yoo-Jeong Noh and John Haynes (CIRA cloud team), and Prof. Steven Miller, Director of CIRA and PI of CIRA's ONR 3D Cloud/OVERCAST project. Dr. Imme Ebert-Uphoff will co-mentor the Machine-Learning algorithm development. Specifically, the individuals in these positions will use cloud retrieval techniques (including machine learning methods) to support a new CIRA 3D global cloud project funded by the Department of Defense, Office of Naval Research (ONR), as well as other cloud projects funded by the National Oceanic and Atmospheric Administration (NOAA). Target projects will include:
- Generating quantitative global cloud products with geostationary/polar-orbiting satellite sensors (ABIs, AHI, SEVIRI, VIIRS, AVHRR);
- Developing physical and/or machine learning (ML) models to quantify cloud layer characteristics, incorporating satellite and model data, applicable to multiple sensors;
- Developing Python codes to construct 3D cloud fields for the individual sensors;
- Building a "Proof of Concept" model to blend 3D cloud products from various sensors and demonstrate preliminary global 3D cloud fields.

Decision Making:
The individuals in these positions will execute a plan of research that will resonate with the underpinning science objectives of the supporting projects. The decisions they make and the approaches they take will be determined by the individuals' own scientific acumen and in consultation with the associated project's Principal Investigators and their research teams. Successful execution of the proposed research, i.e., supporting the tasks, milestones, and deliverables as articulated in the project statements of work, will hinge on the definition of a scientifically-sound plan and its execution. This decision-making process will lay a foundation that will be critical for success of the individuals in these positions with respect to future proposals and in building independent and self-sufficient research programs. Similarly, the individuals in these positions will conduct their research with an eye toward establishing strong partnerships with both CIRA scientists and sponsors in the future.

Essential Job Duties:
Applied Research 60%
- retrieve 3D global cloud fields based on geostationary and polar-orbiting satellite data;
- conduct research and develop machine learning techniques to support a global cloud layer retrieval algorithm;
- coordinate and collaborate with other team members on other machine learning applications in weather

and climate research.

<u>Independent Research 25%</u>
- contribute to and lead scientific studies that serve the CIRA mission;
- develop future proposals that may lead to an independent research program.

<u>Collaborative Research 15%</u>
- travel to scientific conferences to present results;
- collaborate with operational partners and product end users;
- collaborate with CIRA and AI2ES scientists working on similar research projects.

Required Qualifications:
- for Research Scientist/Scholar I: Ph.D. in atmospheric science or closely related field followed by 1-2 years of experience working with meteorological data sets;
- for Research Scientist/Scholar II: Ph.D. in atmospheric science or closely related field followed by at least 3 years of experience working with meteorological data sets;
- experience reading, writing, and manipulating scientific datasets, preferably using Python;
- experience with Linux/Unix OS;
- ability to communicate well, orally and written, and particularly across disciplinary boundaries;
- experience working in a team environment.

Preferred Qualifications:
- experience working with satellite or in-situ remote sensing data sets;
- experience working with atmospheric retrieval algorithms/products;
- experience developing cloud retrieval products;
- experience using machine learning/deep learning method of neural networks;
- prior experience working on NOAA or NASA-related projects.

Salary Range: $67,000-$80,000 per year commensurate with qualifications, experience, and rank

Background Check:
Colorado State University (CSU) strives to provide a safe study, work, and living environment for its faculty, staff, volunteers and students. To support this environment and comply with applicable laws and regulations, CSU conducts background checks. The type of background check conducted varies by position and can include, but is not limited to, criminal (felony and misdemeanor) history, sex offender registry, motor vehicle history, financial history, and/or education verification. Background checks will be conducted when required by law or contract and when, in the discretion of the university, it is reasonable and prudent to do so. In addition, the individual in this position must be able to pass a National Agency Check with Inquiries (NACI, Tier 1 federal background investigation) in order to access federal computer systems.

Commitment to Diversity and Inclusion:
Reflecting departmental and institutional values, candidates are expected to have the ability to advance the Department's commitment to diversity and inclusion.

Application Deadline: Applications will be accepted until the position is filled; however, to ensure full consideration applications should be submitted by 11:59 PM MT on October 2, 2022. For full position announcement and to apply, please click "Apply to this Job" at the following website: https://jobs.colostate.edu/postings/112465. **NOTE:** In your cover letter, **please specifically address the required and preferred qualifications of this position**. <u>A cover letter that fails to address the qualifications of this position may not be further considered after review by the search committee.</u>