Cloud optical property retrieval from a ground-based thermal infrared camera

Reuniwatt

Reuniwatt is a French start-up, settled in Reunion Island (Indian Ocean). Reuniwatt’s team has developed a unique and patented solar power production forecasting tool named Soleka. Soleka uses artificial intelligence-based techniques, vision systems, numerical models and satellite images to achieve efficient predictions.

Soleka is an innovative decision-making tool that has been rewarded many times by various institutions such as the French Ministry of Higher Education and Research, through the CNACETI award (a national contest for innovative technologies), and the Scientific Mission of the Embassy of France in the USA, through the NETVA challenge.

Reunion Island is the perfect laboratory for a renewable energy such as solar power, thanks to a very sunny weather and strong incentive policies. It was the first place in the world to achieve 30% of renewable energies (solar and wind) in its energy mix.

Find out more about Reuniwatt on www.reuniwatt.com

Discover Soleka through these two videos:

- Soleka – Solar forecasting
- Soleka – The challenges of solar forecasting

Internship Location

The intern will either be based in Paris or in Reunion Island (St Pierre).

Internship description

Context

Photovoltaic (PV) production forecasting essentially consists in predicting cloudiness above a given site. Automatic ground-based sky observations with a large angle camera permits to predict cloud cover evolution, at local scale, in the next 30 minutes. Using a thermal infrared camera leads to a more detailed analysis of cloud physical property than observations from a visible range observation camera.
Objectives

The objectives for this internship consist in identifying and highlighting the benefits of thermal infrared vision for the current solar radiation forecasting schemes using a ground-based camera.

Specific tasks

- Bibliographical research on cloud optical property retrieval from broadband thermal infrared ground-based cameras.
- Handling and configuration of an atmospheric radiative transfer model.
- Research and collection of external collocated cloud data (satellite data, meteorological records).
- Implementation of existing cloud physical property retrieval schemes from thermal infrared images (mainly altitude and optical thickness).
- Documentation writing.

Student Profile

Qualifications

Bachelor/Master of Science in one of the following fields: Meteorology, optics, physics.

Skills

We are looking for a skilled and motivated intern interested in atmospheric science, remote sensing and solar energy issues.

Experience with Matlab, mySQL and PHP would be a plus.

Internship Details

Duration

6 months beginning as soon as possible.

Compensation

€400/month + 1 return flight ticket Europe – Reunion Island.

Contact

Send your CV and cover letter to jobs@reuniwatt.com with the following subject: "Infrared camera Internship".

N.B: In France, an internship has more legal constraints than in some other countries. We must write a contract between the company, the intern, and a University. Thus, the intern must be a University student.

References