

Masters 1 – Digitise historical scanned solar maps

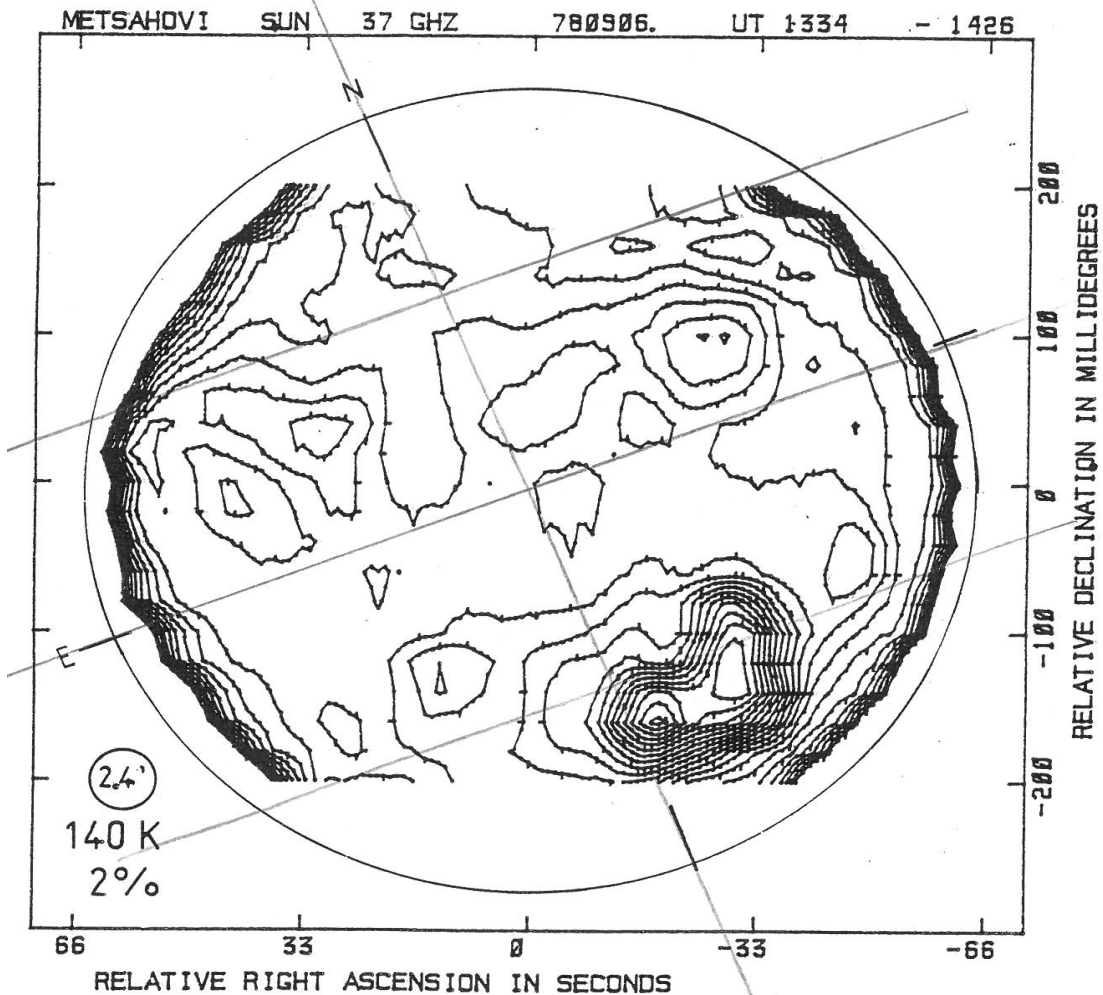
The Department of Computer Science, Aalto University are seeking applicants for a six month funded Masters' project to commence immediately to support the [Metsähovi Observatory](#) based in the School of Electrical Engineering.

The observatory have decades of scanned historical data recorded in the form of line contours, which require digitising and interpolation into comprehensive 2D data arrays, for future automated data analysis. The task is further complicated, because the formats used on all scans vary (see the examples illustrated).

We seek a suitably qualified candidate to program the automation of the processing of the existing scans into the required format, employing an appropriate machine learning based algorithm to cope with the variations in format, orientation of images and various fonts and formats for annotation.

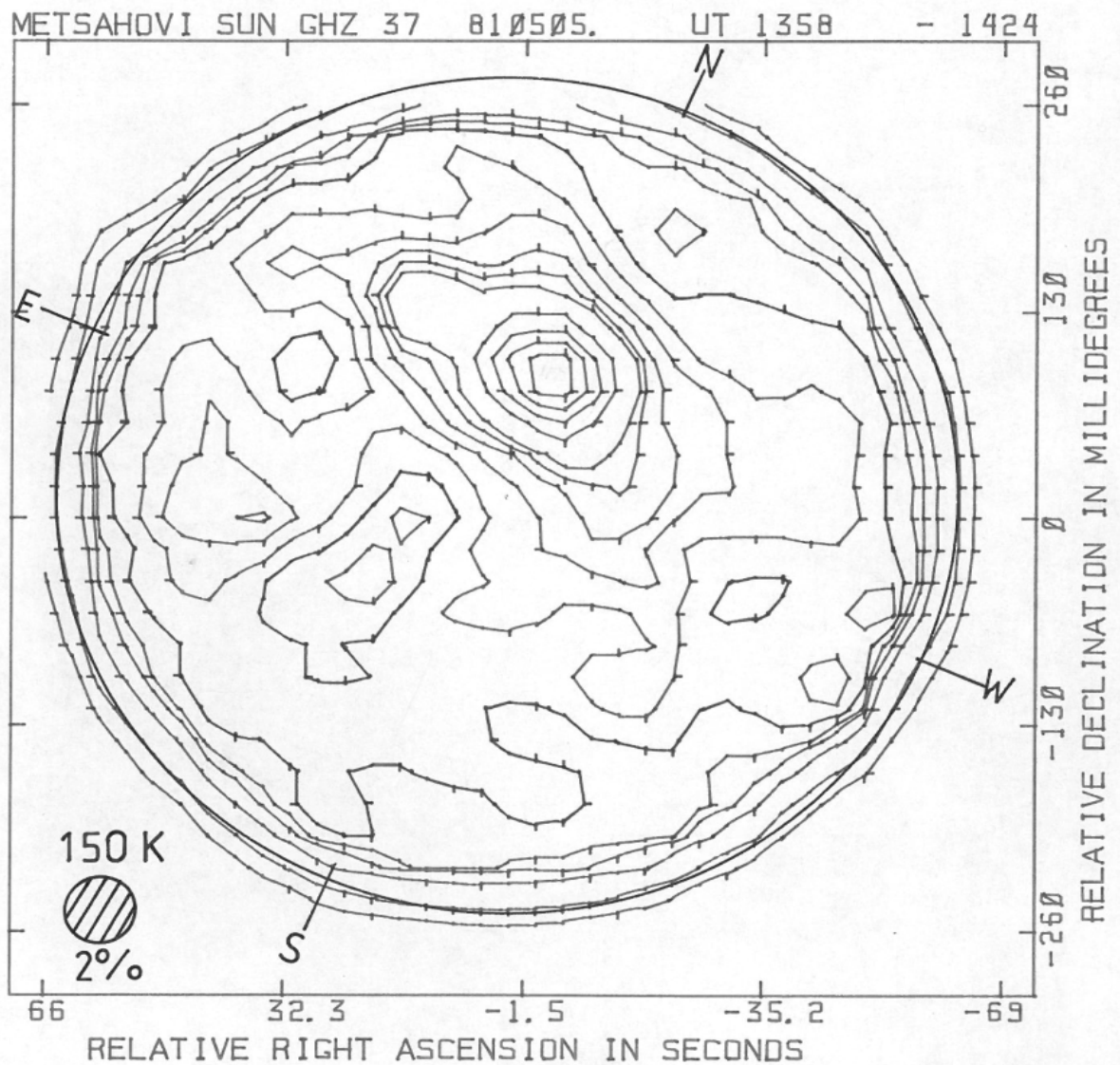
6 month

DATE	6 SEPTEMBER 1978	8 / 1.24
UT TIME	1334-1426	4 / 1.06
FREQUENCY	37 GHz	



For example, the coordinate frame needs to be derived from marked polar axes on scans and 2D array of intensity interpreted from marked contours. It will be necessary to handle discontinuous contours, and recognising directional gradients from tick marks on the contours. In some cases we will require to identify values for the contours with and without values noted for contours. In some instances we will need to identify regions indicative of atmospheric obscuration. The candidate may adapt existing tools or develop new tools as required.

It is probable that these tools and skills will be transferable to many other applications, so should be of interest to the community outside astronomy and for other computer science applications.



The project will suit a candidate with programming experience, familiarity with python, and an interest in machine learning. There will be a requirement to visit the Metsähovi Observatory at least weekly, where the co-supervisor Dr. Juha Kallunki is based. The other co-supervisors are Dr. [Joni Tammi](#) (Metsähovi, director), Dr. [Frederick Gent](#) (ReSoLVE Center of Excellence). A supervisor suited to the successful candidate will be included from Computer Science.

Applicants should apply to frederick.gent@aalto.fi, with a brief summary of your relevant experience and qualifications. Questions relating to the project may be directed to [Dr. Tammi](#) or [Dr. Gent](#).