

Computer Vision Scientist 2d3 Ltd

2d3 Ltd plans to expand its research and development team by the appointment of a Computer Vision Scientist. (See accompanying sheet for a full description of the company and its business.)

Rapid growth in the use of aerial motion imagery for military, environmental, police, and relief operations has led to the urgent need for new ways to exploit the collected imagery. Today, in most instances, aerial motion imagery is simply screened live to a ground-based operator whose task is to spot events and conditions of interest. Computer vision techniques are now being introduced to ease the operator's task, and to extract information which is not directly evident in the unprocessed imagery. 2d3's long experience of exploiting computer vision in other markets gives it a key advantage.

Examples of the classes of vision techniques which are applicable include:

- Image-based tracking (stabilization, SFM, SLAM, multi-sensor systems, etc)
- Object detection, recognition, & classification (with/without tracking, single/multi-view)
- Automatic mosaicing (using a range of matching methods)
- Photometric optimisation & matching
- Camera calibration & image rectification
- Novel view synthesis
- Super-resolution & compression artefact reduction
- Hyperspectral image fusion
- Terrain & townscape 3D modelling

2d3 undertakes CV research as part of an on-going product R&D programme. It also undertakes projects sponsored by UK and other government agencies, many undertaken in collaboration with industrial and academic partners. To provide test imagery for its projects, 2d3 regularly makes trial flights, using both manned and unmanned aircraft. In addition, trial imagery is made available by 2d3's industry and government partners and customers. 2d3 and other companies in the Oxford Metrics Group have a wide range of contacts, collaborations, and sponsorships with academic computer vision groups, both in Oxford universities and throughout the world.

2d3's CV research supports a growing range of products for image processing. TacitView is comprehensive Image Analysis workstation for the capture, enhancement, management, and exploitation of aerial reconnaissance imagery. Since it was announced earlier this year, TacitView has taken part in a number of UK and US trials. AltiMap is an automatic mosaicing product for the generation of orthorectified, geo-registered mosaics from still or video imagery. Other products are in development.

The main software tools currently used for research and development in 2d3 are Matlab and C++. Experience in the use of these tools, while not absolutely essential, makes communication with fellow researchers and developers much easier. Where possible, 2d3's research is published in the open literature and presented at conferences. In addition, most of 2d3's externally-funded research projects require the preparation of effective proposals and regular, comprehensive, and well-written reports.

general terms and conditions