**** EXTENDED deadline for open postdoc position (Geoazur/Inria)****

Open post-doc position at Géoazur in collaboration with Inria, at Sophia
Antipolis, France, in the research area: Curvilinear network detection
on satellite images using AI, stochastic models and deep learning.

EXTENDED Submission deadline July 31, 2019

Open Position for a post-doc scientist at Géoazur (https://geoazur.oca.eu/fr/acc-geoazur) in collaboration with Inria
(https://www.inria.fr/en/centre/sophia), at Sophia Antipolis (Nice
region), France, in the area of Computer Vision, Deep

Learning and
Remote Sensing applied to curvilinear detection on both optical and SAR
satellite images (project abstract below).
Both Geoazur and Inria Sophia Antipolis are ideally located in the heart
of the French Riviera, inside the multi-cultural silicon valley of
Europe (ie. Sophia-Antipolis, see https://en.wikipedia.org/wiki/Sophia_Antipolis).

This position is funded by University Côte d'Azur (UCA, see
http://univ-cotedazur.fr/en#.XOforoWTpT4).

Duration: 18 months
Starting date: between September 1st and December 1st 2019.
Salary: gross salary per month 3000 EUR (ie. approximately 2400 EUR net)

Please see full announcement
https://faultsrgems.oca.eu/images/FAULT/News/Post-doc_offer-AI-ManighettiZerubia.pdf,
or on https://euraxess.ec.europa.eu/jobs/411481

Candidate profile

Strong academic backgrounds in Stochastic Modeling, Deep Learning,
Computer Vision, Remote Sensing and Parallel Programming with GPUs
and/or multicore CPUs. A decent knowledge of Earth and telluric features
(especially faults) will be appreciated.

To apply, please email a full application to both Isabelle Manighetti
(manighetti@geoazur.unice.fr) and Josiane Zerubia (josiane.Zerubia@inria.fr), indicating "UCA-AI-post-doc" in the e-mail
subject.

The application should contain:

- a motivation letter demonstrating motivation, academic strengths
and related experience to this position.
- CV including publication list

- at least two major publications in pdf
- minimum 2 reference letters

Project abstract

Curvilinear structure networks are widespread in both nature and
anthropogenic systems, ranging from angiography, earth and environment
sciences, to biology and anthropogenic activities. Recovering the
existence and architecture of these curvilinear networks is an essential
and fundamental task in all the related domains. At present, there has
been an explosion of image data documenting these curvilinear structure
networks. Therefore, it is of upmost importance to develop numerical
approaches that may assist us efficiently to automatically extract
curvilinear networks from image data.

In recent years, a bulk of works have been proposed to

extract
curvilinear networks. However, automated and high-quality curvilinear
network extraction is still a challenging task nowadays. This is mainly
due to the network shape complexity, low-contrast in images, and high
annotation cost for training data. To address the problems aroused by
these difficulties, this project intends to develop a novel, minimally-supervised curvilinear network extraction method by combining
deep neural networks with active learning, where the deep neural
networks are employed to automatically learn hierarchical and
data-driven features of curvilinear networks, and the active learning is
exploited to achieve high-quality extraction using as few annotations as
possible. Furthermore, composite and hierarchical heuristic rules will
be designed to constrain the geometry of curvilinear structures and
guide the curvilinear graph growing.

The proposed approach will be tested and validated on extraction of
tectonic fractures and faults from a dense collection of satellite and
aerial data and "ground truth" available at the Géoazur laboratory in
the framework of the Faults_R_Gems project co-funded by the University
Côte d'Azur (UCA) and the French National Research Agency (ANR). Then we
intend to apply the new automatic extraction approaches to other
scenarios, as road extraction in remote sensing images of the Nice
region, and blood vessel extraction in available medical image databases.

--

Josiane Zerubia
INRIA Sophia-Antipolis Méditerranée