Offre n°2024-07175

Research Technician in computer vision / deep learning for fighting against human trafficking for the European HEROES Project

Le descriptif de l’offre ci-dessous est en Anglais

Type de contrat : CDD

Niveau de diplôme exigé : Bac + 2 ou équivalent

Fonction : Personnel des fonctions support (IT)

A propos du centre ou de la direction fonctionnelle

The Inria Sophia Antipolis – Méditerranée center counts 34 research teams as well as 8 support departments. The center’s staff (about 500 people including 320 Inria employees) is made up of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrative staff. 1/3 of the staff are civil servants, the others are contractual agents. The majority of the center’s research teams are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Four teams are based in Montpellier and two teams are hosted in Bologna in Italy and Athens. The Center is a founding member of Université Côte d’Azur and partner of the I-site MUSE supported by the University of Montpellier.

Contexte et atouts du poste

The Inria STARS team is seeking a young backend developer with a background in computer vision (4 months). We are especially interested in candidates with backgrounds in computer vision, deep learning, machine learning, and applied mathematics.

The candidate is expected to conduct object detection/tracking research, specifically in videos for human trafficking for the HEROES Project - Novel Strategies to Fight Child Sexual Exploitation and Human Trafficking Crimes and Protect their Victims.

Trafficking of human beings (THB) and child sexual abuse and exploitation (CSA/CSE) are two big problems in our society. Inadvertently, new information and communication technologies (ICTs) have provided a space for these problems to develop and take new forms, made worse by the lockdown caused by the COVID-19 pandemic. At the same time, technical and legal tools available to stakeholders that prevent, investigate, and assist victims - such as law enforcement agencies (LEAs), prosecutors, judges, and civil society organizations (CSOs) - fail to keep up with the pace at which criminals use new technologies to continue their abhorrent acts. The HEROES project’s main objective is to use technology to improve the way in which help and support can be provided to victims of THB and CSA/CSE.

The partners include Inria and Universidade de Brasília - UnB, International Center for Missing and Exploited Children, Secretaria de Inteligencia Estratégica de Estado - Presidencia. INRIA Grant is 200 Keuros out of 3 Meuros.

For more information, see the HEROES Web Page.

The recruitee will mainly work with Francois Bremond, but beyond that, he/she will be able to collaborate with members of the STARS team. Support for traveling e.g. to conferences or other scientific meetings is provided.

-----------------------------

The last decade has seen the emergence of machine learning methods for decision support and information retrieval in large volumes of data, such as Boosting, Support Vector Machines, Random Forest and artificial neural networks known as “deep convolutional architectures”. These deep learning techniques provide solutions for complex applications such as information retrieval from huge volumes of multimedia content, speech recognition, social community extraction from social networks or knowledge extraction from textual data. In particular, CNN algorithms for deep convolutional neural networks have been applied to images and videos, for people monitoring applications such as posture detection and estimation, gesture recognition and action detection algorithms.

The STARS group works on the automatic interpretation of images and video sequences using the methods described above. These interpretations include the automatic detection of CSAM (Children Sexual Abuse Material) from videos or images. Not having access to this type of data, the solution proposed by the STARS team is to couple the detection of minors using age estimation algorithms with
an explicit content recognition module. In order to provide the most accurate age estimation possible, specific algorithms have been developed in the laboratory, based in particular on spatio-temporal body information, or on facial ageing features with a system of comparison with references.

**Mission confiée**

**Tasks involved:**

In this context, and as part of the HEROES project (https://qas-heroes.es/), the subject of this mission is to integrate the various models trained, notably explicit content detection and age estimation, into an application with an intuitive graphical interface to enable users (police forces) to evaluate these algorithms on their data sets and captured material. This application is part of the demonstrator to be provided during the project pilot in the form of a web-based application (hosted in a closed network), enabling more efficient deployment within police infrastructures, and must integrate writing to and reading from a database in order to retain the results of previously analyzed files.

**Principales activités**

The Inria STARS team is seeking a Post Doctoral researcher with a strong computer vision and mathematics background. We are especially interested in candidates with solid computer vision, deep learning, machine learning, and applied mathematics backgrounds.

**Team**

The STARS research team combines advanced theory with a cutting-edge practice focusing on cognitive vision systems.

*Team website*

https://team.inria.fr/stars/

**Compétences**

- The candidate must be grounded in computer vision basics and have solid mathematical and programming skills.
- The candidate must be committed to scientific research and influential publications.

**Avantages**

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking and flexible organization of working hours
- Social, cultural and sports events and activities
- Access to vocational training
- Contribution to mutual insurance (subject to conditions)

**Rémunération**

From 1810 € gross monthly (according to degree and experience)

**Informations générales**

- **Thème/Domaine :** Vision, perception et interprétation multimedia
  Instrumentation et expérimentation (BAP C)
- **Ville :** Sophia Antipolis
- **Centre Inria :** Centre Inria d'Université Côte d'Azur
- **Date de prise de fonction souhaitée :** 2024-05-01
- **Durée de contrat :** 4 mois
- **Date limite pour postuler :** 2024-03-17

**Contacts**

- **Équipe Inria :** STARS
- **Recruteur :** Brémond François / Francois.Bremond@inria.fr

**A propos d'Inria**

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de
métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

**L'essentiel pour réussir**

- You would like to push the boundaries of video understanding.
- You are rigorous, serious, and reliable in your work.
- In order to protect its scientific and technological assets, Inria is a restricted-access establishment. Consequently, it follows special regulations for welcoming any person who wishes to work with the institute. The final acceptance of each candidate thus depends on applying this security and defense procedure.

**Attention:** Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

**Consignes pour postuler**

To apply, please send an application including

- Cover letter
- CV
- List of publications
- Contact information for at least two references who can provide recommendation letters upon request.

**Sécurité défense** :
Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

**Politique de recrutement** :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.