2017-00001 - Post doctoral researcher on generative neural network models

Type de contrat : CDD de la fonction publique
Contrat renouvelable : Oui
Niveau de diplôme exigé : Thèse ou équivalent
Fonction : Post-Doctorant
Niveau d'expérience souhaité : De 3 à 5 ans

A propos d'Inria

Inria, institut de recherche dédié au numérique, promeut « l'excellence scientifique au service du transfert technologique et de la société ». Inria emploie 2700 collaborateurs issus des meilleures universités mondiales, qui relèvent les défis des sciences informatiques et mathématiques. Son modèle ouvert et agile lui permet d'explorer des voies originales avec ses partenaires industriels et académiques. Inria répond ainsi efficacement aux enjeux pluridisciplinaires et applicatifs de la transition numérique. Inria est à l'origine de nombreuses innovations créatrices de valeur et d'emplois.

A propos du centre ou de la direction fonctionnelle

Grenoble Rhône-Alpes Research Center groups together a few less than 800 people in 35 research teams and 9 research support departments.

Staff is localized on 5 campuses in Grenoble and Lyon, in close collaboration with labs, research and higher education institutions in Grenoble and Lyon, but also with the economic players in these areas.

Present in the fields of software, high-performance computing, Internet of things, image and data, but also simulation in oceanography and biology, it participates at the best level of international scientific achievements and collaborations in both Europe and the rest of the world.

Contexte et atouts du poste

The THOTH research team at INRIA Grenoble (http://thoth.inrialpes.fr) consists of four permanent researchers and about 25 members total, and is focused on computer vision and machine learning. It's main long term objective is to learn structured visual recognition models from little or no manual supervision. Research focuses on the design of deep convolutional and recurrent neural network architectures: in particular those that can be used as general-purpose visual recognition models, suitable to support different tasks such as recognition of objects, faces, actions, localization of objects and parts, pose estimation, textual image description, etc. A second research axis focuses specifically on learning such models from as little supervision as possible. The third research direction is large-scale machine learning, needed to deploy such models on large datasets with little or no supervision.

You will have access to a significant GPU compute cluster, and work closely together with other team members in deep learning and applications in computer vision. The position is part of the Deep in France research project, funded by the French national research funding agency (ANR). The candidate will interact with other project partners through regular meetings and/or joint projects and publications.

Mission confiée

Mission

The goal of this position is to develop deep neural networks for semantic segmentation and (conditional) image generation, using latent variable and autoregressive data models.

Job offer description

Accurate modeling the distributions of high-dimensional visual data is extremely challenging, but one of the most promising directions to learn about the structure underlying visual data from the vast quantities of unlabeled data that are accessible. Similar tools as those for deep unsupervised generative models can also be used to develop structured conditional prediction models, eg to synthesize a new view of a face in a given input image, or to produce semantic segmentation maps of images.

Principales activités

The goal of this position is to develop new models combining the benefits of latent variable models (such as variational auto encoders) and auto-regressive models (such as pixel-CNNs). These models should both have good predictive accuracy, but also efficient to train and sample from for images of fairly complex scenes and resolution (eg 256x512). Multi-scale architectures are likely to be a key to success to address this issue. Beyond (conditional) image generation, other applications that are of interest are image inpainting, semantic (instance) segmentation, and object localization.

Compétences

Skills and profile :

- creative, autonomous, and highly motivated
- PhD degree in machine learning, computer vision or related field
- Strong publication record in PAMI, JMLR, IJCV, NIPS, ICML, CVPR, ICCV, etc...
- Solid programming skills (Python, C++, deep learning framework)
- Solid mathematical knowledge
- Excellent communication skills in English, spoken and written

Avantages sociaux

- Restaurant on site
- Financial participation for public transport
- Social security
- Social and sporting activities
- Arranging working time
- French courses

Informations générales

- **Thème/Domaine :** Vision, perception et interprétation multimedia
  Statistiques (Big data) (BAP E)
- **Ville :** Montbonnot
- **Centre Inria :** CRI Grenoble - Rhône-Alpes
- **Date de prise de fonction souhaitée :** 01/01/2018
- **Durée de contrat :** 12 mois
- **Date limite pour postuler :** 31/12/2017

Contacts

- **Equipe Inria :** THOTH
- **Recruteur :**
  Verbeek Jakob / jakob.verbeek@inria.fr

Conditions pour postuler

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.

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.