Offer #2025-08601

Research Engineer F/M ShapeUp! Keiki

Contract type : Fixed-term contract

Renewable contract : Yes

Level of qualifications required : Graduate degree or equivalent

Fonction : Temporary scientific engineer

About the research centre or Inria department

The Inria Grenoble research center groups together almost 600 people in 23 research teams and 7 research support departments.

Staff is present on three campuses in Grenoble, in close collaboration with other research and higher education institutions (University Grenoble Alpes, CNRS, CEA, INRAE, …), but also with key economic players in the area.

Inria Grenoble is active in the fields of high-performance computing, verification and embedded systems, modeling of the environment at multiple levels, and data science and artificial intelligence. The center is a top-level scientific institute with an extensive network of international collaborations in Europe and the rest of the world.

Context

Position: Research engineer at INRIA – Grenoble, MORPHEO team

Date: The position is open and the candidate can start as soon as possible. Funding is for 12 months (renewable). A start in Mai 2025 could be possible.

Advisors: The retained candidate will be advised by Sergi Pujades (Morpheo INRIA Grenoble, France) and Nikolas Hesse (Swiss Children's Rehab, University

Children's hospital Zurich, Switzerland).

Assignment

Context:

The ShapeUp Keiki project is the third project of the ongoing ShapeUp Studies series, where humans in the ages ranging from newborn to 5 year old will be studied.

The purpose of these studies is to explore and develop ways to measure health and body composition from 2D and 3D images, and optical scans. These technologies aim to take a look inside areas of the human body hidden by our skin. The study will test if new imaging machines can provide useful and detailed information about various health and wellness risks. A cohort of voluntary participants will provide the data, creating the largest and most powerful description of optical body shape and its association to body composition, metabolic markers, function, and dietary intake.

Main activities

Objectives

In this project the research engineer will work on the registration of the articulated body model SMIL [1, 2] to scan data (3D point clouds) of infants. An existing code base exists, which is suitable for adults, but infants present several additional challenges. Their poses can not be directed and automatic methods of pose detection will need to be studied. The shape of the participants of the ShapeUp Studies is also different from the shape of the population used to learn the SMIL model. The goal will be to create a more generic body model that better captures the variations in shape.

[1] **Learning an Infant Body Model from RGB-D Data for Accurate Full Body Motion Analysis**
Hesse, N., Pujades, S., Romero, J., Black, M. J., Bodensteiner, C., Arens, M., Hofmann, U. G., Tacke, U., Hadders-Algra, M., Weinberger, R., Müller-Felber, W., Schroeder, A. S.
In International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), September 2018

[2] **Learning and Tracking the 3D Body Shape of Freely Moving Infants from RGB-D sequences**

Hesse, N., Pujades, S., Black, M. J., Arens, M., Hofmann, U. G., Schroeder, A. S. Transactions on Pattern Analysis and Machine Intelligence, 42 (10), Special Issue on RGB-D Vision, pp. 2540-2551, 2019.

Skills

Candidate Profile:

- A master in Computer Science or Applied Mathematics (mandatory).
- Strong mathematical background – geometry – optimization techniques
- Strong coding skills (pytorch, pytorch3D)
- Good Oral and written English
- Preliminary experience in the following areas is a plus: computer vision – 3D point clouds – registration techniques – geometry processing – 3D pose estimation.

A specific section in the application letter must explain the personal experience in these areas.

Important:

- Due to the collaboration with the Hawaiian Cancer Centers, bi-weekly group meetings are held in the evening in Europe (20h - 22h). The candidate should arrange once a week to be available at this time.

- An annual consortium meeting is held in Hawaii (usually in spring). The candidate should be available for a business travel of approx. a week.

Benefits package

- 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 (90 days / year) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training

- Social security coverage under conditions

Remuneration

From 2,692 € (depending on experience and qualifications).

General Information

- **Theme/Domain :** Vision, perception and multimedia interpretation
  Information system (BAP E)
- **Town/city :** Montbonnot
- **Inria Center :** Centre Inria de l'Université Grenoble Alpes
- **Starting date :** 2025-05-01
- **Duration of contract :** 12 months
- **Deadline to apply :** 2025-04-30

Contacts

- **Inria Team :** MORPHEO
- **Recruiter :**
  Pujades Sergi / sergi.pujades-rocamora@inria.fr

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

The keys to success

How to apply:

Please send your application including

- Mandatory: Complete CV

- Mandatory: Letter of motivation (at most one page) – briefly describing the personal experience in the relevant areas (see Candidate Profile).
- Mandatory: Degrees and lists of grades (translated to English or French)
- Mandatory: Name and e-mail address of two references
- Topic of Master thesis & Thesis and reports if available

Warning : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

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- Mandatory: Name and e-mail address of two references (this typically includes your Master thesis supervisor)
- Topic of Master thesis and report if available

through this Jobin website

Defence Security :
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST).Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :
As part of its diversity policy, all Inria positions are accessible to people with disabilities.