

Postdoc Position on Knowledge Extraction and Reuse for NC Machining

The University Research Laboratory in Automated Production (LURPA / Ecole Normale Supérieure de Cachan, France) is recruiting a postdoc.

Start date: Tentatively **October 2012**, although the actual starting date is negotiable.

Type of contract: Fixed term contract (CDD). The term of the postdoc position is one year with an option to renew for up to one year.

Salary: About 2100 EUR net per month (2600 EUR gross), health insurance included (French Social Security system).

Location: This post-doctoral fellowship will be located at the Ecole Normale Supérieure de Cachan, Cachan campus near Paris with frequent displacements carried out at Montreuil.

Subject: Knowledge extraction and reuse for NC Machining

Objectives:

This post-doctoral fellowship will be part of the "ANGEL" R&D project recently funded by the French Inter-ministerial Fund(FUI)and supported by top French competitiveness clusters (SYSTEMATIC PARIS REGION "Systems & ICT", VIAMECA "Advanced Manufacturing" and ASTECH "Aeronautics & Space"). The project is supported by a consortium of 9 partners (AIRBUS, MBD, SNECMA, CADLM, DATAKIT, SPRING Technologies, UF1, LURPA - ENS Cachan and Roberval-UTC). ANGEL aims at developing a new software system for Optimized and Intelligent Industrialization of NC Machining in order to bring productivity gains of about 10%. The expected results (among others) can be summarized as follows

- Capitalization and exploitation of the machining know-how
- Direct conversion of CAM data into optimized and validated machining programs
- Generation of fast, accurate and convergent machining cost estimate
- Modular infrastructure based on standards (STEP-NC, Web services)
- Consideration of Sustainable Manufacturing indicators

This post-doctoral research project aims at proposing and developing techniques for the automated extraction and reuse of machining knowledge contained in existing NC programs. Know-how will be extracted and stored in a new specific knowledge database. The objective is threefold: i) to allow to quickly find and read contextual NC machining, ii) to extrapolate the use and reuse of know-how for new machining contexts, and iii) to be integrated in a new digital process chain through STEP-NC to enrich CAM and Virtual Machining (NC Simulation).

Work proposed and expected results:

The candidate will complete the following tasks, among others:

- Study of data mining, Knowledge extraction and retrieval tools, state-of-the-art on existing solutions, and study of possible solutions
- Study of knowledge representation, inference and exploitation in the context of NC machining, state-of-the-art on existing solutions, and study of possible solutions
- Development of the devised solutions, implementation of tools supporting the approach

- Application of the developed approaches in order to validate our new techniques and tools onto use cases and protocols developed by industrial partners
- Publication of these results into international conferences and journals

Required skills and profile:

Knowledge of modeling methods and languages (meta-models, object-oriented,...)

Knowledge of databases algorithms and structures

Knowledge and applications of data mining would be appreciated but is not mandatory

Candidates who enjoy programming (C, C++, Python, Java) would be appreciated, as the work is likely to include software development

Applicants must have a PhD in Mechanical Engineering, Manufacturing Engineering, Automation Engineering, Computer Science or a closely related field.

Fluent in English, French is a plus

Proven communication and interpersonal relationships skills, methodical approach, autonomy, team player

Contacts:

Applications and inquiries should be addressed directly to:

Dr. Nabil Anwer

anwer@lurpa.ens-cachan.fr

Applications should include:

- a curriculum vitae (including list of publications)
- a brief statement of the particular contribution you would like to make to the project
- a reference letter by the PhD supervisor
- the names and contact details (postal and e-mail addresses) of two referees.