
# Project 3gERP: Postdoc and Ph.D. positions

A postdoc position and a Ph.D. scholarship are available at the Department of Computer Science, University of Copenhagen (DIKU) within *3d generation enterprise resource planning systems* (3gERP), a collaborative strategic research project with partners at DIKU (computer science), Copenhagen Business School (CBS, information systems) and Microsoft Development Center Copenhagen (MDCC, enterprise systems).

## *The 3gERP Project*

Enterprise software accounts for more than $200 billion in annual global revenue (about 5 times the total revenue of the computer games industry) and costs 10-20 times more than the hardware it runs on. The goal of the 3gERP project is to contribute to developing theories, technologies and tools aimed at making enterprise (ERP) systems more customizable, evolvable and affordable, specifically for small and medium-sized enterprises (SMEs). Starting the second project phase this summer the focus is on executable *declarative domain-specific languages* for bridging the gap from requirements to running code, specifically:

- process specification languages and tools for capturing, managing, and analyzing processes such as contracts, work flows and production schedules;
- reporting languages and incrementalization technology for automatic transformation of business analysis functions to operate in real time in a transactional environment;
- logic-based modeling of legal rules and reasoning in the business domain;
- presentation frameworks/languages for automatically generating role-tailored user interfaces from process, role and data rendering specifications;
- design and implementation of a prototype ERP system based on the *Process-Oriented Event-driven Transaction Systems (POETS)* software architecture, which encompasses the above components.

## *Ph.D. position*

We are looking for a Ph.D. student to work on

- reporting languages and incrementalization technology for automatic transformation of business analysis functions to operate in real time in a transactional environment.

This will include mathematical and computer science studies of incrementalization (transforming batch programs into programs that work online, updating their result continuously as new data arrive), programming of software tools, integration into a prototype enterprise system based on POETS, and real-life evaluation in SMEs in collaboration with project partners at CBS and MDCC.

As a Ph.D. student you will perform and publish scientific research, program your results, contribute to the prototype implementation of POETS, and participate in research, teaching and outreach activities of the Algorithms and Programming Languages (APL) research group at DIKU.

We require:

- a Master's degree in computer science or in a mathematical, natural science, engineering or IT discipline including or supplemented with a solid computer science component;
- knowledge of formal methods for designing and manipulating programs, documented by one or more courses or projects in programming language semantics, program analysis, model checking, type systems, logic, process calculi, program transformations (meta-programming), domain-specific languages, formal specification languages or similar;
- interest in and experience with programming (experience with typed functional programming languages is advantageous);

- good written and oral communication skills in English.

Practical experience with software development and ERP systems or business information systems is not required, but will be considered advantageous.

We offer:

- full-time employment for 3 years at the internationally highly ranked University of Copenhagen;
- a salary of approximately 3600 Euro (ca. $5100) per month including pension benefits, subject to Danish income taxes;
- a stimulating scientific environment at DIKU with its long-standing reputation for pioneering contributions to programming language design and implementation (such as BNF, partial evaluation, language-based complexity theory, programming language semantics specfication, type-based program analysis, region-based memory management, size-change termination) and their application (in software reengineering, operating systems, domain-specific language design, reversible computing);
- a congenial project team and informal work environment in Copenhagen, one of the world's most livable cities; DIKU is located in the attractive Østerbro section, only 5 minutes by bicycle or bus from happening Nørrebro and 10 minutes from Copenhagen city center with its many attractions.

For more information please contact: Professor Fritz Henglein, henglein@diku.dk.

How to apply:
If you are interested in this position please send your application as a single ZIP-formatted attachment containing PDF- or plain-text documents to henglein-phd@diku.dk. The email message should have the subject line "3gERP Ph.D. application".

The application must contain the following parts:

- Cover letter, including contact information
- Motivation for applying for the Ph.D. position
- Detailed curriculum vitae
- Documentation of academic qualifications (M.S. degree, course program, etc.)
- Documentation of other qualifications (if any) such as relevant practical experience
- If you have any publications (this is not required, though), copies of at most 2 publications (max. 20 pages each), including co-authorship statements if they are jointly authored.
- Up to two letters of reference, preferably sent directly by the author to henglein-phd@diku.dk with subject line "Letter of reference for <name of applicant>". (The author of a letter is requested to indicate whether or not the applicant is familiar with the letter's contents at the time it is sent.)

Applications from all qualified candidates irrespective of age, sex, religion or ethnic background are invited.

Important dates:
Deadline for applications and letters of reference: **August 31st, 2009**
Expected start of Ph.D. position: October 1st, 2009, or as soon after that as possible

## *Postdoc position*

We are looking for a postdoc to work on

- design and implementation of a prototype ERP system based on the *Process-Oriented Event-driven Transaction Systems (POETS)* software architecture, including process, reporting and rules components in collabortion with the other team members at DIKU, and
- generating role-tailored user interfaces from process, role and data rendering specifications.

As a postdoc you will perform and publish scientific research, play a central role in the prototype implementation of POETS, help supervise Ph.D. students on the project, collaborate with project partners and participate in research, teaching and outreach activities of the Algorithms and Programming Languages (APL) research group at DIKU.

We require:

- a Ph.D. in computer science or in a mathematical, natural science, engineering or IT discipline with a solid computer science (algorithms, languages, systems) foundation;
- expertise in formal methods relevant for POETS; e.g. process, contract or work flow modeling, transformational/model-driven programming, user interface generation;
- expertise in strongly typed functional programming;
- good written and oral communication skills in English;
- good organizational and software development skills.

Practical experience with ERP systems or business information systems is not required, but will be considered advantageous.

We offer:

- full-time employment for 15 months at the internationally highly ranked University of Copenhagen;
- a salary of minimum 5000 Euro (ca. $7000) per month including pension benefits, subject to Danish income taxes (a reduced tax rate of 25% may be applicable depending on where you are from);
- a stimulating scientific environment at DIKU with its long-standing reputation for pioneering contributions to programming language design and implementation (such as BNF, partial evaluation, language-based complexity theory, programming language semantics specfication, type-based program analysis, region-based memory management, size-change termination) and their application (in software reengineering, operating systems, domain-specific language design, reversible computing);
- a congenial project team and informal work environment in Copenhagen, one of the world's most livable cities; DIKU is located in the attractive Østerbro section, only 5 minutes by bicycle or bus from happening Nørrebro and 10 minutes from the city center with its many attractions.

For more information please contact: Professor Fritz Henglein, henglein@diku.dk.

How to apply:
If you are interested in this position please send your application as a single ZIP-formatted attachment containing PDF- or plain-text documents to henglein-phd@diku.dk. The email message should have the subject line “3gERP postdoc application”.

The application must contain the following parts:

- Cover letter, including contact information
- Motivation for applying for this postdoc position
- Detailed curriculum vitae
- Ph.D. dissertation and documentation of academic qualifications (Ph.D. degree, courses/projects)
- A complete list of publications with indication of which publications you consider most relevant for the position (max. 3).
- Electronic copies of each of the indicated publications together with, where relevant, co-author statements.
- Documentation of other relevant qualifications, if any, such as academic and professional qualifications within ERP systems and/or programming language development/implementation as well as communication (incl. teaching and project advising) skills.

- Up to 3 letters of reference, preferably sent directly by the respective authors to henglein-phd@diku.dk with subject line "Letter of reference for <name of applicant>". (The author of a letter is requested to indicate whether or not the applicant is familiar with the letter's contents at the time it is sent.)

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